



FRIDAY, FEBRUARY 28, 1896.

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Contributions.

The Source of New York's Prosperity.

NEW YORK, Feb. 24, 1896.

TO THE EDITOR OF THE RAILROAD GAZETTE: I notice that in the issue of the *Railroad Gazette* of Feb. 21, my esteemed friend Mr. Edward P. North has questioned the correctness of certain statements in the recent report of the Board of Consulting Engineers to the Department of Docks.

It seems to me that the sum total of the influence of ocean commerce on the prosperity of the city of New York, from the foundation of the city to the present time, is such in character and amount as to justify the expressions of the report, and sufficiently well known and realized to render entirely superfluous any defense of those expressions. Further than this it should be stated that the relative parts played by manufactures and ocean commerce in the building up, and in the life of New York City cannot be determined by the values of their products for the census year or for any other one year. Comparisons of this sort, like many others, are almost invariably odious; but if in this case one is to be made it should be on the basis of the total values of the products of manufactures and of ocean commerce for the whole life of the city from its beginning to the present time. Even if the requisite statistics were available to show that the former sum is the greater, I should deny that that alone could justify the conclusion which Mr. North seems to have reached.

It is commonly asserted that "figures will not lie," but they lend themselves to that particular line of business with such amazing readiness and facility that their general character cannot be considered altogether righteous. As a matter of fact, the ocean commerce of this port thrived for scores of years before manufactures had any material value, and it is not an exaggeration to say that it founded and built up the city of New York under these conditions. In saying this I do not wish to be understood to underrate the important influence which the manufacturing interests of New York City have exerted on its present industrial and business supremacy. In reality, all the interests, both maritime and manufacturing, have been and are indispensable to the present prosperity of the city.

Again, I must modify the statement of Mr. North, in which he says that "New York is the largest manufacturing city in the world" because "the raw materials for manufacture can be assembled cheaper here than elsewhere, and distributed more expeditiously and at less cost than from any other point." As a broad, unqualified statement, this is altogether too severe on our good protectionist friends. I suppose Mr. North means that raw materials can be assembled more cheaply at New York City, and that the manufactured products can more expeditiously and cheaply be distributed "than from any other point" to places at which these products find markets. At this point I realize there is grave danger of being drawn into an extended economic discussion, which nothing will induce me to enter; I will only say, as conservatively as possible, I believe it can clearly be shown that raw materials can cheaply be assembled at New York City, and that distribution from the same point can be made expeditiously and cheaply, largely because of the foreign commerce of the port; indeed, it is my judgment, because of that more than of any one thing else.

I am sure that no one has a higher appreciation than mine of the value of the manufacturing industries of the city of New York, or will more readily accord them credit for the essential part they have played in its material development; but I am sure that if one will carefully consider the indirect as well as the direct

influence, past and present, of the water borne traffic into and out of the port of New York on this same development, there will be discerned a sufficient "blessing" in nearly \$900,000,000 of it annually to justify the language of the report.

In closing, I ought to state that these observations are very brief expressions of my own views, written for myself, and not as coming from the Board of Consulting Engineers.

WM. H. BURR.

The Mississippi River Improvement.

ST. LOUIS, Mo., Feb. 17, 1896.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Feb. 7 there is published a letter on "The Present Aspect of the Mississippi River Navigation Improvement," which should not be allowed to pass unnoticed.

In the first place, the Mississippi River Commission has nothing to do with the improvement of that part of the river lying between St. Louis and Cairo, but is confined by existing laws to the river, between the mouth of the Ohio and the Head of the Passes. Whether this is good policy or not, Congress, and not the Commission, is responsible for it. The greatest obstructions to navigation lie between St. Louis and Cairo. Below that point there have been several seasons in the past 20 years when there has been a navigable channel of more than eight feet without any dredging or other artificial aids.

So, far, then, the "support of a movement of this kind" does not necessarily involve "want of confidence in the methods of the Commission," as the bulk of the work is to be done above where its jurisdiction begins.

There is another point bearing on this question which is important. Section 4 of the Organic Act creating the Commission says: "It shall be the duty of said Commission to take into consideration and mature such plan or plans and estimates as will correct, *permanently* locate and deepen the channel and protect the banks of the Mississippi River, *prevent destructive floods*, etc., etc." This was, very naturally, held to mean that temporary expedients like dredging were not contemplated by Congress. After several years of work designed to permanently locate and deepen the channel, it was found that the mighty river was not so easily conquered, and that permanent improvement was a work of far greater magnitude than had been conceived by the most conservative engineers. It was learned by costly experience that flimsy structures put in to obstruct the current did induce deposit, but were very soon destroyed, and it taxed the ingenuity of the most skillful engineers to build structures that would resist the powerful influences that constantly menaced them. There was no precedent for work of such magnitude under such conditions, and much time and money was necessarily spent to gain the required experience. This work was largely confined to two reaches, Plum Point, 150 miles below Cairo, and Lake Providence, 540 miles below Cairo. A large amount of revetment work was also done at various other points; and more than one-third of the money appropriated was devoted to building levees to "prevent destructive floods" and aid in the general work of improvement.

It may be said in passing that the two reaches above named were considered as the very worst places below Cairo. The bars in both these reaches often shoaled to four and a half feet before the improvement work began. At no time since the improvements were well under way has there been any serious hindrance to navigation in either one of these reaches.

These efforts made it apparent that permanent improvement must necessarily mean a large expenditure of time and money, and the men at the head of the steamboat interests at St. Louis appeared before the Commission and urged measures of temporary relief, such as portable jetties, dredging, and countless other devices. They were met with the statement that the Commission was confined by law to permanent works.

The situation, however, grew more desperate, and steamboatmen became more urgent and carried their appeals before Congress, and finally the Commission recommended an allotment for dredging, which was approved by the Secretary of War.

It is altogether too much to say that prior to the appointment of Colonel Flad "no civil engineer exerted any marked influence upon the policy or work of the Commission" when we remember that Captain Jas. B. Eads was an active member for four years, and Major B. M. Harrod has been a leading worker and a potent force in framing the policy of the Commission from the day of its organization to the present time.

It will be recognized from what has been said that the idea of dredging clearly came from the agitation of steamboat men. When the Commission concluded to test the efficiency of dredges a committee of two was appointed to take general charge of the matter. Each member of this dredging committee prepared several alternative plans for a dredge, and their studies finally resulted in the experimental dredge "Alpha." The actual work of plans, contract and construction was in the hands of the engineer officer in charge of the First District, who was not limited to "mere draftsmen with no engineering ability." The district officer acted under the direction of the Committee on Dredges, and the result was a dredge, each end of which represented the idea of different members of the committee as to what the dredge should be. As it turned out, the pump of one end and the suction of the other failed to

meet expectations, and the present dredge, "Alpha," is the result of this compromise.

The "lack of hearty support" by the Commission is hardly borne out by the statement a little further along that allotments amounting to \$700,000 have been made for "this experimental work and to the building of new dredges." The amount actually expended in dredging experiments and experimental dredge to Dec. 31, 1895, is about \$187,000. All allotments are made on the approval and recommendation of a majority of the Commission, and the fact that allotments have been made is of itself sufficient evidence of "hearty support in the preparation of an experimental dredge," and it follows that the existence of two dredge boats at this time proves that there is no foundation for the broad intimation that only one member of the Commission is in favor of dredging. That the Commission should hesitate to endorse dredging as the only remedy was but natural. The most enthusiastic advocate of dredging did not feel at all sure that the channel, once opened, would maintain itself long enough to justify the expense of opening it.

This was the only part of the problem about which there were serious doubts. The principal feature of the dredge, a centrifugal pump, was not novel or new except in its dimensions. The arrangements of floating discharge pipes and other details were, in the main, new. Other features of construction had been previously used on a smaller scale in many other places. The mechanical designing and construction of the dredge was at no time the most important item in the solution of the dredging problem. Nothing short of actual experiments could settle the question of efficiency of dredges, no matter how great the professional skill of those who now see, after the problem is solved, that a navigable channel can be maintained by dredging. If it is true that the success of dredging is fully demonstrated, as Professor Johnson says, then it follows that the bait of "no cure, no pay" has no value. It is quite evident that the contractor should have a liberal profit out of the million dollars annually received. That is to say, the work according to his estimates will actually cost considerably less than that sum. There is no good ground for assuming that they can do it cheaper than the Commission, and it is hardly fair to assume that Congress or the public cares to put a snug profit into the pockets of the contractors. Since the problem has been solved by the efforts of the Mississippi River Commission with the money supplied by the Government, it is only reasonable that the Government should profit by utilizing the experience gained by its engineers and using the dredges which are now ready for active work next season.

If Congress will appropriate \$1,000,000 per annum for 20 years for the purpose of dredging, no "division of opinion" among the members of the Commission will prevent spending the money in the most judicious manner, according to the experience already gained and to be acquired as the work progresses. There is no ground whatever in all this, for the statement that "we may well conclude that a private contract offers greater assurance of success" when "the methods they (the contractors) would employ are doubtless the same which the Commission has now shown to be practicable." It must be clearly shown, beyond the shadow of a doubt, that the work can be done better and cheaper by contract before Congress will be justified in making such a change. If that can be done, all good citizen should heartily approve of having the work done by contract. In this view of the matter it is, of course, assumed that the sole object aimed at is to accomplish the desired results at the least cost to the Government.

Vicksburg is 780 miles, not "900 miles," from St. Louis, and it would require a very large force under the Government to watch the progress of the contract work, and this would add a very material amount to the million dollars proposed in the contract. If Congress decides that the work is to be done by contract, then should be thrown open to the public and let to the lowest bidder. In that event it would be best to divide the river up into suitable divisions or districts, and receive bids on any part or the whole. This would give an opportunity for those who have special devices to show what there is in them.

The responsibility of the contractor as to damages to lands or contraction works caused by erosion induced by their jetties or dredges must be very carefully and definitely outlined. To those who are most familiar with the problem, it seems clear that the abandonment of works to "correct and permanently locate the channel" and to "prevent destructive floods" would be a very grave mistake. The money already expended on works and plant would be lost, and after 20 years of dredging the condition of the river would be the same as it was before any work was done.

A far better alternative would be for Congress to extend the jurisdiction of the Commission to St. Louis and add to their duties as laid down in the organic act quoted above, that of maintaining a channel during the low water season by means of dredges or other suitable devices. To do this, ample means should be provided. Let Congress decide how much an improved river with good navigation at all times would be worth to the country and how much they would be justified in paying for the improvement, and then appropriate as large an amount annually for a period of, say, twenty years, as could be judiciously expended.

Professor Johnson intimates that the people of the Mississippi Valley have lost confidence in the work of the Mississippi River Commission. At the river convention held at Vicksburg last October, the delegates from more than thirteen states, covering the entire

length of the river, voted a unanimous and hearty endorsement of the Commission and its work. Even the commercial bodies which are endorsing the scheme of dredging by contract and the promoters of this scheme themselves all proclaim themselves the friends of the Commission and disclaim any desire to oppose or hamper it.

Professor Johnson says of the Commission: "They have always been more or less divided in their views as to the proper expedients to employ." Considering the intricacy and magnitude of the problem with which they have had to deal, a unity of opinion would have been much more remarkable. It is not at all to their discredit that they have held different views or even that they should change their views as experience developed new difficulties, new facts.

It is extremely improbable that, even with "the best engineering advice" and "the proper professional assistance" a board of seven honest, intelligent men could be selected to undertake the improvement of the Mississippi River who would not be more or less divided in their opinions.

The important feature of this agitation is not whether the work shall be done by the Commission or by contract. The public cares little for either one or the other except so far as they may be instrumental in securing the best results for the least money. The engineering profession and the public at large will be amply satisfied if the action taken by Congress results in that judicious and proper expenditure of money which will give the relief that the navigation interests of this great commercial highway deserve.

J. A. OCKERSON,
M. Am. Soc. C. E.

Demurrage Managers' Meeting.

The Seventh Annual Meeting of the National Association of Car Service Managers was held at New Orleans, Feb. 14 and 15, with a good attendance. In the absence of the President, Mr. A. P. Wilder, of the Missouri & Kansas Association, who was detained by a meeting of the roads interested in bringing Kansas City under car service regulations, Mr. N. S. Hoskins, Vice-President, presided.

A communication was received from the Association of American Railway Accounting Officers asking the co-operation of this Association in their efforts to establish uniformity in the terms made use of in railroad accounting, which, after full discussion, was unanimously adopted.

Mr. J. C. Haskell, Manager of the North Eastern Car Service Association, recently organized at Atlanta, Ga., stated that the Chamber of Commerce of Macon had brought a case before the Railroad Commissioners of the state of Georgia, praying that car service rules and regulations be not enforced at Macon, on the ground of discrimination, because they were not enforced by the same railroads at Atlanta. Mr. Haskell submitted the matter for discussion. After full discussion it was the sense of the members present that it would be proper to maintain that there was no discrimination in enforcing the regulations at one point, while they were not enforced at another point upon the same road or roads, there being nothing in common between dealers at different points where the circumstances and conditions were dissimilar. One or two legal decisions were quoted in support of this view.

Mr. J. C. Loomis, Manager of the Louisville Car Service Association, read a paper which he stated he had been instructed by the members of his Association to present to the National Association, explaining the causes which led to the dissolution of the Louisville Association, which is to take effect March 1 next. The convention adopted the following resolution:

"Resolved, That it is the sense of this Association that the dissolution of the Louisville Association is deeply to be regretted, especially in view of the great services rendered the car service movement throughout the country by the firm enforcement of the regulations by this Association, at great labor and expense, when the movement was new and untried; and it is further the sense of this Association that the legal decisions obtained by the Louisville Car Service Association, notably that of the celebrated Kentucky Wagon case, have been one of the chief factors in permanently establishing the legal status of the car service regulations, and placing them upon the broad grounds of sound public policy."

An interesting paper was read by Mr. J. D. Berry, Manager of the Columbus Association, on the subject of The Collection of Car Service Charges on Low-class Freight, instances being cited of certain commodities in which, the payment of demurrage being refused, the lading at forced sale would scarcely bring sufficient to pay freight charges. The restriction of shipments was impracticable owing to the lading being the refuse of the mines, etc., which must be loaded and shipped. Mr. Berry's idea was that the best way to handle such cases was to get the cars unloaded with as little delay as possible and promptly sue for the car service charges.

The much mooted question of charging for "private cars on private tracks" was again brought up for discussion. Several owners of private cars have persisted in their demands that their cars on private tracks of their customers should not be included under car service regulations. General discussion disclosed the fact that there is a variety of practice among the various associations. On some of the large railroads which are mem-

bers of half a dozen different associations, the question of private cars on private tracks is being handled in as many different ways. Some of the agreements provide that no charge shall be made where both cars and track are owned by the same parties; others provide that no charge shall be made where both car and track are owned by any private party or parties; other associations are working under an agreement with the owners of private cars, exempting the same from charge while on the private tracks of their customers after 48 hours; and other associations have a similar agreement with private car lines without the clause releasing from responsibility.

A committee was appointed, consisting of A. L. Gardner, Baltimore; A. J. Elliott, Peoria, and E. A. Gordon, Boston, to prepare a resolution recommending uniformity of practice on the part of all associations with regard to private cars on private tracks. This committee found itself unable to properly digest the subject, and suggested the appointment of a standing committee to submit the subject to the American Railway Association, requesting that Association to define the proper position which should be taken by the various car service associations with respect to private cars on private tracks, and to further suggest to the American Railway Association that a uniform rule on this point be recommended to all roads. The above-named gentlemen were appointed a Standing Committee to take the matter up with the American Railway Association.

Officers for the ensuing year were elected as follows: President, A. P. Wilder, Topeka, Kan.; Vice-President, R. A. Taylor, Richmond, Va.; Secretary and Treasurer, A. G. Thomas, Scranton, Pa. Mr. J. D. Berry, Columbus, O., is Chairman of the Reference Committee, which receives suggestions for subjects for the next convention.

The place fixed upon for the next annual meeting is Boston, Mass., June 16, 1897.

State Regulation of Railroads.*

In the matter of railroad construction and control, the policy of the people, which is still continued in many states, had been so clearly manifested 17 years ago that your company decided that unless it should there after appear that it had been changed, it would be unsafe for it to make further extensions, and that its policy should be that which it has since pursued in fortifying its position with reference to such conditions as it has been compelled to contend with.

It was long ago held by the Supreme Court of the United States that "the charter of a railroad corporation is a contract within the meaning of the contract clause of the Federal Constitution," but for many years the people of the states to which we have referred apparently have failed to give due consideration to the fact that each railroad company, before commencing the construction of its railroad, entered into a contract with each state in which its road, or any part thereof, is located, and that, upon the faith of the state so pledged, the company expended a very large amount of money in constructing and equipping its road.

One of the provisions in all such contracts is, in substance, that the state will always permit, and the railroad company shall always have, power to charge and collect reasonable rates for transporting persons and property, and in all cases at the time such contracts were made it was doubtless understood by both parties that the rates then considered reasonable should thereafter be so considered, unless new conditions should arise.

And especially, as to all such contracts made twenty-five or more years ago, it was understood from their very nature and object, as clearly as though it had been stated therein, that the state, in providing for such public highways as railroads are held to be, would cause no more of them to be constructed than it intended the people should support by payments for their use. It was also understood that railroad companies would be afforded such protection as is involved in the enforcement of all laws, and especially the common law relative to common carriers; and that railroad property would be taxed on the same basis, with reference to its actual value, as other property is taxed. In these matters, as well as in many others, the just expectations of railroad companies have not been realized.

A law was enacted by the Legislature of Illinois, approved May 2, 1873, and similar laws have long been in force in other states, which practically empower railroad commissioners to limit railway rates at their discretion. An eminent writer upon the subject of railroad management, in an article published in the *North American Review*, in its April number, 1875, referring to this law, asserts that "the Illinois railroad law was ingeniously framed so as to make those who were to use the railroads of Illinois the final arbiters as to what it was reasonable they should pay for such use." More than twenty years' experience under the law has proved the truth of the assertion.

This law practically affords absolute protection against charges in excess of those declared reasonable by railroad commissioners, who are appointed by the people to guard and protect their interests. But with reasonable rates the people apparently are not satisfied, and they have long acted upon a plan by which rates are reduced below such as are declared reasonable by railroad commissioners. This plan reduces the price of transportation by increasing its cost. It is based upon contracts made by the state with persons who build railroads for the purpose of making a profit for themselves while the roads are being constructed.

After the state has caused the construction of as many railroads as can be operated with economy, it contracts with such persons as we have referred to for such number of competing roads as will, by the subdivision of traffic and by the orders of its railroad commissioners, force, at least, a part of them to bankruptcy.

When a railroad company is struggling to avoid bankruptcy, its more fortunate competitors are compelled to make rates ruinously low to retain their traffic and, therefore, the plan of the people for obtaining cheap transportation on all railroads is successful. The people, apparently, forgetting their contracts, attempt to justify such action by saying that their object is commercial competition; but there can be no commercial competition in the absence in the right to sell what the competitor

has to offer at what it is worth in the market, or in the absence of the right to decline to sell when the market price is not satisfactory. Commercial competition does exist among carriers on the oceans, lakes and rivers, although many of them are incorporated under state charters. They are permitted to sell transportation or decline to sell it at their pleasure, and are not restricted as to their charges. There are good reasons why such freedom of action cannot be permitted on railways, but such reasons render commercial competition among them impossible. The result is not competition in the common acceptance of that term; it is strife which causes evils without number, and the confiscation of railway property.

By reason of the course the people have pursued, there are four or five times as many competing railroads as are needed, and only about one-fourth, consisting of those most advantageously located, and such as have superior facilities, have for the last twenty-five years been able to earn dividends. The remaining three-fourths of the railroads, for the greater part of that period, have earned less than their fixed charges; and although hundreds of them have been sold in bankruptcy, reorganized and repaired, very few, if any of them, have thereafter earned any return whatever for those who have contributed the cost thereof. Such contributions, aggregating many millions of dollars, have been made with the hope that with an increased development of the country, and the consequent increase of traffic, the people would permit increased net earnings, by which, at least, a part of the cost of the roads might be saved; but although the expected development of the country and the increased amount of traffic have been realized, the states have continued to contract for railroads to subdivide the traffic, and commissioners have continued to reduce rates to such extent, that in many parts of the country the net earnings per mile are less than such earnings were twenty-five years ago. It, therefore, appears in nearly all cases, that the money contributed in the hope of saving such properties, has been, in effect, contributed to enable the people to continue to enforce railroad service at less than its actual cost.

It is difficult to ascertain precisely what the total reduction of railroad rates during the last 25 years has been, but, approximately, in the Western States the average of passenger rates was at least 50 per cent., and the average of freight rates at least 100 per cent. higher in 1870 than in 1895. In view of the fact that at all times during that period the average of operating expenses has been equal to from 65 to 75 per cent. of the rates charged, it is easy to see that such reduction of rates has, in the case of most roads, naturally led to bankruptcy. It is, however, but just to say that, so far as we are advised, when railroad commissioners have ordered rates reduced they have acted in accordance with the imperative wishes of those by whom they are employed. Under such conditions the railroad mileage of the country has been increased during the last quarter of a century 237 per cent., while during the same period the population of the country has increased, approximately, 78 per cent.; and still in many states there is a standing invitation to contract for the construction of railroads under laws that require no inquiry as to the use that can be made of them when completed, or at any time thereafter.

It is interesting to contrast the railroad policy of this country with that of other countries. For example, comparing Great Britain and Ireland with Illinois, we find that the former, for each mile of railroad, has nearly 12 per cent. more territory and five times as many inhabitants as the latter. Comparing Great Britain and Ireland, Belgium, France, Germany, Russia, Austria-Hungary, Italy and Spain, with the United States, we find that in the European countries named there is an average of 2,617, and in the United States only 380 inhabitants for each mile of railroad. In the European countries last named the total railroad mileage reported is 127,673 miles, or about 71 per cent. of that of the United States, and the total population is about 335,000,000.

The course pursued by the state of Illinois, relative to the construction, operation and taxation of railroads, may be considered a fair type of that pursued in all states in which railroads have been constructed with little or no cost to such states or their inhabitants.

In 1837 the state of Illinois undertook the construction of about 1,300 miles of railroad. It expended about \$15,000,000, exhausted its credit, and failed to complete any part of the proposed railroads. For about ten years the state, with a population of less than 500,000, was unable to pay the interest on its debt, and very little progress was made in its development. It then appealed to persons in the older states, and made such contracts with them as we have referred to, under which such railroads as were needed were constructed, without expense to the state or its inhabitants. The benefits the people of Illinois have realized by the use of the railroads then constructed are beyond the power of computation. How unjustly the state has dealt with those who manifested their faith in its honor in the days of its adversity, is shown by its subsequent history.

The laws of Illinois provide for the construction of railroads upon and across streets and common highways, subject to certain conditions. . . . If it becomes necessary to separate the grade of the railroad tracks and the grade of the streets, it seems equitable that the cost thereof be divided between the people and the railroad companies, so that each shall pay in proportion to the benefits it is to derive from the expenditure. In many States a division of cost in such cases is required by statute, and, although there is no such statute in Illinois, the equity of dividing the cost, as, for example, in the construction of viaducts in Chicago, has, for many years, until recently, been recognized and acted upon. Recently public sentiment has changed, and now the city of Chicago demands that railroad companies shall elevate their tracks so that the streets of the city may pass under them, and that the total cost thereof shall be paid by the railroad companies.

All property in Illinois, except railroads, was assessed for taxation in 1877 at a valuation of \$892,380,972, and in 1895 at a valuation of \$753,869,082—decrease in valuation in 19 years, \$138,511,890, or about 15½ per cent. With the exception of railroads, the actual increase in the value of all kinds of property in the state during that period has been very great. The railroad property of the state was assessed at a valuation of \$37,141,180 in 1877, and at a valuation of \$79,231,164 in 1895. The increased railroad mileage during that period is 47 per cent.; the increased net earnings a fraction less than 40 per cent.; and while, as before stated, the assessment of all other property in the state has been reduced 15½ per cent., the assessment of railroad property has been increased 113.56 per cent. We are unable to state the total amount of taxes paid by railroad companies in Illinois in 1895, but the amount paid in 1894 is \$3,846,378.87, which is equal to 77.43 per cent. of the total amount of dividends earned in that state by all railroad companies operating railroads therein.

The Twenty-fourth Annual Report of the Railroad Commissioners of Illinois, the last published, is for the

*Extracts from the remarks of President Blackstone in the Annual Report of the Chicago & Alton Railroad.

year ending June 30, 1894. From it we derive the following facts: Excluding railroad companies having less than three per cent. of their mileage in Illinois, the report shows that nine companies operating railroads therein paid dividends, the total amount of which is equal to an average of 4.92 per cent. on their shares. The report states that 36 companies operating railroads in the State failed to earn as much as their fixed charges, and that the total deficit of such companies is \$6,687,875.

If we take into account the depreciation in the physical condition of the roads, which is not reported, but which always takes place under such circumstances, it is safe to say that the actual total deficit of the Illinois railroads in that year was at least \$20,000,000.

Notwithstanding the official report of the Commissioners shows that the railroads of Illinois, considered

This will be much the longest arch span in the world. The principal existing arches (all metal) are as below:

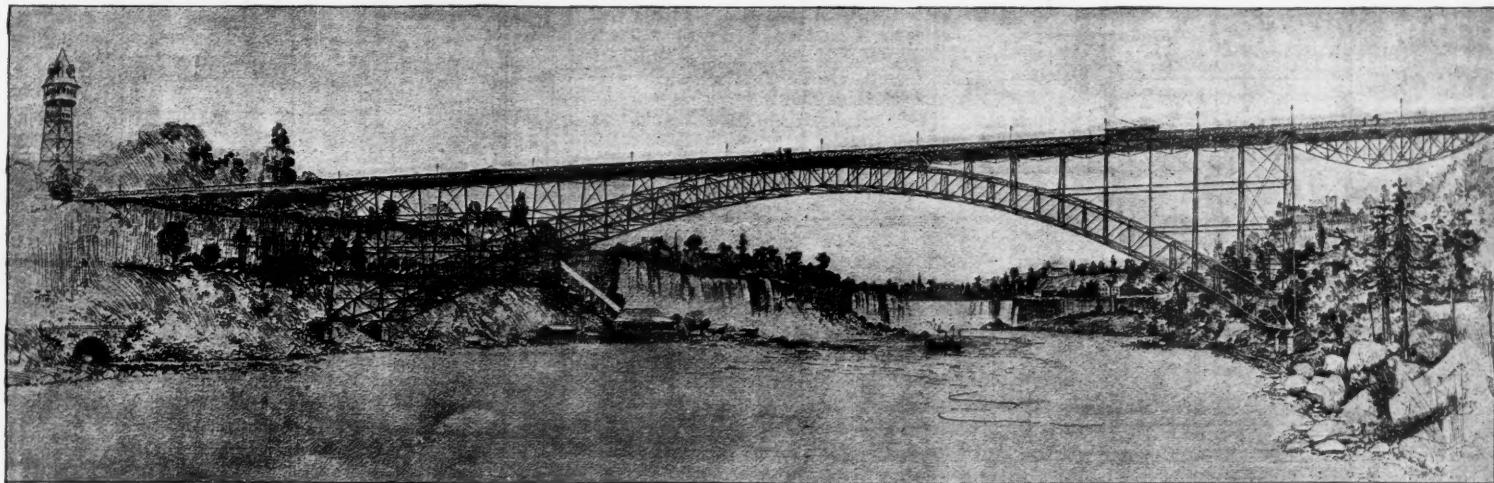
	Span.	Rise.
Luis I., Oporto, Portugal.	566	146
Garabit, France.	542	170
Pia Maria, Portugal.	525	121
Fado St. Louis Bridge.	520	47
Washington Bridge, New York.	510	91.7
Paderno, Italy.	492	123
Rochester Driving Park.	428	67

The bridge to be built at Niagara is from the designs of Mr. L. L. Buck, Chief Engineer, who is also the Chief Engineer of the new East River bridge between New York and Brooklyn, and who has prepared plans for an

We are not informed when the building of the superstructure will be begun, but it is supposed that it will commence this spring. The abutments are nearly completed, and these we are now able to describe in detail, through the courtesy of Mr. R. S. Buck, the Resident Engineer in charge, who, by the way, is not related to Mr. L. L. Buck.

ABUTMENTS.

The point of striking interest about these abutments, is the small amount of masonry for such a great length of span. As seen from the Suspension Bridge above, the four apparently diminutive masses of concrete, carrying the still more diminutive masses of cut stone ma-



The 840-foot Steel Arch at Niagara.

as a whole, were serving their patrons at rates which were less than the actual cost of the service, the publication of the report was soon followed by an order of the Commission requiring all of the railroad companies in the state to reduce their rates for transporting freight, in conformity with a new schedule and classification which has been in force since the first day of July last. The order does not require passenger rates to be reduced.

If the time shall come when every railroad company in this country shall have reason to feel that it is justly treated, and that it is possible for it, by lawful service to ward off impending bankruptcy, the temptation to unjustly discriminate by secret rates and other unlawful practices will be mainly removed, and we may expect a rivalry among railroads prompted by their own interest in which each will strive to outdo the other in safety and promptly transporting persons and property, and in the excellence of their accommodations and service. But for such rivalry just and reasonable support is an indispensable prerequisite.

Unless popular sentiment in this country shall so change as to practically recognize the principle—as it is recognized in other countries—that railway control by the state in the interest of the people involves the duty of the state to protect the just rights of those at whose expense railways are constructed and operated, we see no reason why we may not expect the railroad history of the last quarter of a century to repeat itself.

The 840-ft. Steel Arch at Niagara.

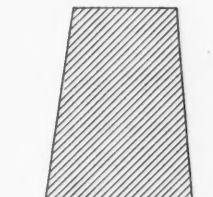
The bridge soon to be built across the Niagara gorge by the Niagara Falls & Clifton Suspension Bridge Co. will be a remarkable one in several ways. It will have a span, between centers of end pins, of 840 ft., and a rise of 150 ft. from the level of the pins at the skewbacks to the center of the ribs at the crown of the arch, and this

arch bridge to replace the existing railroad suspension bridge at Niagara. The Rochester Driving Park bridge, which was shown in the *Railroad Gazette* of July 17, 1891, was also built from Mr. Buck's designs and under his direction. This new Niagara bridge will have two flanking spans, one on the American end 190 ft. long, and one on the Canadian end 210 ft. long. The total metal in the bridge structure will be about 4,000,000 lbs.

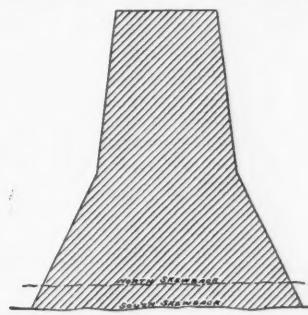
The arch will be built out from either end, without false works as a matter of course, as false works would be quite impossible in the Niagara gorge. The anchor pits for the anchorage to be used during construction are now being made.

sorily almost invariably elicit the remark that they seem small to do the work to be required of them. However, they are not so small as they appear from above, nor are they to be by any means as heavily loaded as are the foundations of many equally important structures. Yet in the matter of saving in the cost of foundation as in other respects, the design could scarcely be better suited to the location or the location to the design.

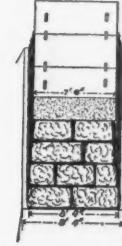
It was first expected that on both sides of the river the abutments would rest on solid rock—the Medina sandstone. The exact location was controlled by the conditions on the New York side. The raceway of the Cataract Construction Company's tunnel renders impossible what would in many respects be the best location. It



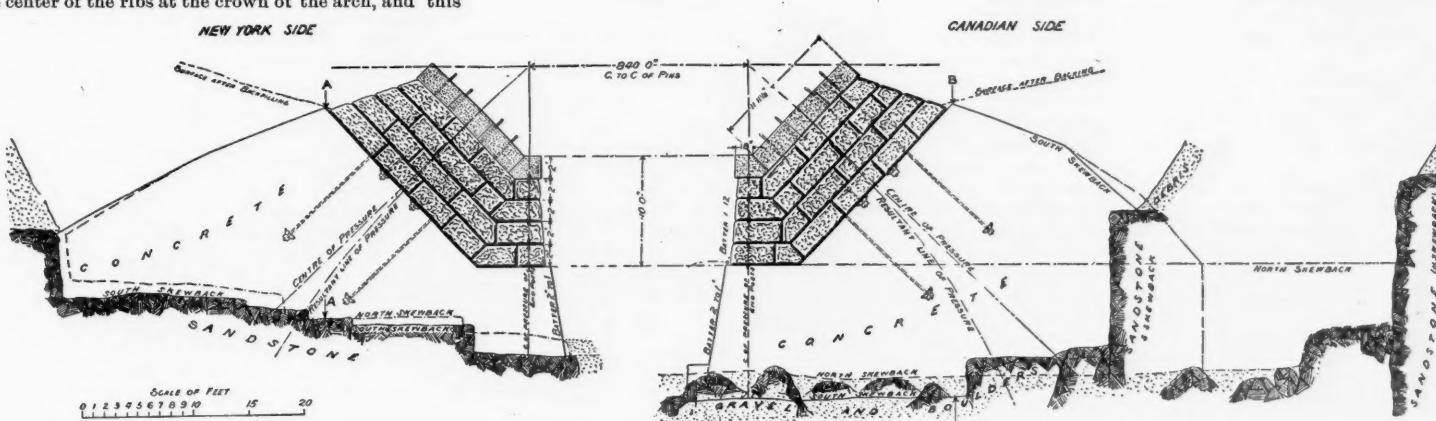
Section A-A.



Section B-B.



Front Elevation of Masonry.



Abutments for the 840-foot Steel Arch at Niagara.

latter point is about 170 ft. above low water. The depth of the trusses is 26 ft.; they stand 68 ft. 7 in. apart center to center at the skewbacks and have a batter of 1 ft. in 8, giving a width of 30 ft. between centers of top chords at the crown of the arch. The bridge will carry one floor 46 ft. wide, divided longitudinally into three parts. On the middle portion will run two trolley car tracks; this is 22 ft. 9 in. wide. Each side of these tracks will be an 8-ft roadway for carriages and outside of these will be raised sidewalks 3 ft. 9 in. wide. These walks will be raised 6 in. above the roadway level. Between the carriageways and the trolley car tracks will be wooden guard rails and the outside railings along the sidewalks will be of iron.

The suspension bridge now used for highway and footpath will be kept in service until the new arch is ready for use. The grade of the new bridge will be about a foot higher than that of the old bridge at the New York end, the grades being the same at the Canada end. The center lines of the two bridges do not coincide, being on the New York end about 13 ft. 9 in. apart and meeting on the Canadian side. Obviously, it will be a nice job, requiring some contrivance to build the new bridge without disturbing traffic on the old; but as Mr. Buck did a very much more difficult job in replacing the suspended structure of the railroad suspension bridge at Niagara without interrupting traffic he can be trusted to carry out the present enterprise successfully.

necessitates swinging the center line of the proposed bridge south from the center line of the present bridge about 13 1/4 ft. at the New York abutments in order to keep the north abutment out of the raceway and permit it to rest on solid rock, unaffected by the blasting done in excavating the raceway. The two center lines come together on top of the bluff on the Canada side.

The rock on the New York side was covered with loose debris of broken rock and disintegrated shale from the tunnel. The rock had to be located carefully, as it sloped gradually toward the river until it reached about low water line, and then dropped off perpendicular to a great depth. The abutments on this side were put as near as possible to the edge of vertical face, and at the

same time have a secure footing. The rock was sounded for overhang, but none was found. The rock was stepped back so as to offer enough vertical face of solid rock to take up all the horizontal thrust from the arch with ample safe unit pressure.

On the Canada side an outcropping of the sandstone just above the site of the abutments pointed so convincingly to its presence under the abutments that no soundings were made. But contrary to its usual trend, which is parallel to the water's edge and exposed at low water, it turned sharply back from the water right at the out-

work was begun Sept. 23, 1895, the contract requiring that it be completed by Dec. 1. Two sudden rises of the river washed out the cofferdams on the Canada side, but the damage and loss of time due to these accidents were not considerable. The New York abutments were completed, except for pointing the masonry and back filling. The concrete portions of the Canada abutments were completed, but before the masonry could be laid an ice jam formed in the river and suspended all further operations about Jan. 7. Ten more working days should suffice to complete the Canada abutments.

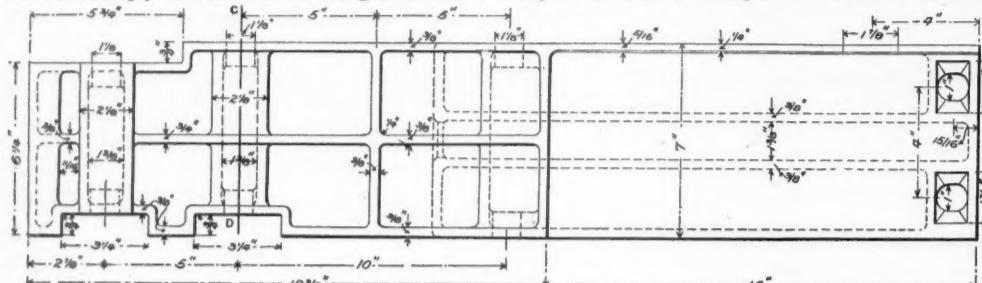


Fig. 1.—Gould's Malleable Iron Draft-Beam.

cropping and appeared in the excavation for the south abutment about 40 ft. back from the front face of the abutment; and in the excavation for the north abutment about 63 ft. back from the front face of the abutment.

The face of the rock is vertical, and from its appearance and the soundings taken, it was evidently at a depth under the abutments beyond reach. The material on top, or, at least in front of the solid rock, and doubtless the same all the way down, consists of boulders ranging from pebbles to several cubic yards in size, in a matrix of gravel, close packed and firm. Mr. L. L. Buck, Chief Engineer, after examining this foundation, decided to build on it, flaring the sides of the concrete to give ample base and extending it back to the vertical rock face in the north pit to furnish sufficient solid rock bearing to take up the horizontal thrust. This foundation of boulders and gravel is, perhaps, next to solid rock, as secure a foundation as could be desired, especially fortified by the solid rock backing. The piers of the railroad cantilever bridge, crossing the river just below, rest on the same character of foundation, but the load being imposed vertically bears less favorably on the foundation than does the inclined thrust of the arch. The excavation for the Canada abutments of the arch was carried about 4 ft. below extreme low water in the south pit and about 2 ft. below in the north pit. The excavation for the piers of the cantilever was carried down to 3 ft. above extreme low water.

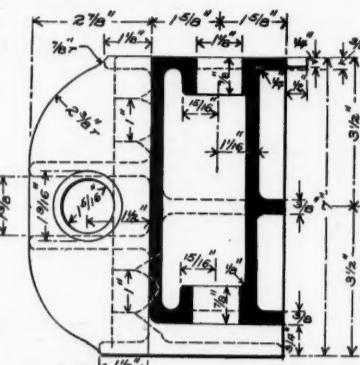
The maximum pressure on top of the masonry of the arch abutments will be 4,729,000 lbs. for both abutments on one side. The direction of this pressure is at an angle of 44 deg. 30 min. with the horizontal. The normal to the inclined face of the abutments is at an angle of 43 deg. 30 min. with the horizontal, this being about a mean of the angles with the horizontal of the resultant pressures on the two sides. The shore span at the end where maximum pressure comes is 210 ft. long, on the other end 190 ft. long. The range of the line of pressure is 8 deg. 30 min. from 39 deg. to 47 deg. 30 min. with the horizontal.

The maximum pressure on the coping will be 220 lbs. per square inch; and on the concrete 101 lbs. per square inch. The maximum vertical pressure developed on the foundations will be about 35 lbs. per square inch. The maximum horizontal pressure developed would be about 150 lbs. per square inch on the vertical face of solid rock, if we do not credit friction on the bottom or gravel and boulder backing with any power of resistance to this thrust. But with a coefficient of friction of .55 for the rock and .75 for the boulder and gravel bottom, the bottom friction alone would be sufficient to hold the abutments in place with the maximum load imposed. So safety against any horizontal movement is doubly assured.

The factors of safety throughout are large, but the abutments were built with a view to accommodating an increase of 25 per cent. in the loading, should it be desirable at any time in the future to increase the capacity of the superstructure. The concrete was proportioned 1 cement: $2\frac{1}{2}$ sand: $4\frac{1}{2}$ broken stone. Giant Portland cement was used throughout. Chaumont limestone was used for the first-class masonry. The courses are 2 ft. thick and laid to $\frac{1}{2}$ -inch joints. The Chaumont stone is hard and strong and well adapted for laying in cold weather as it is unaffected by frost.

In excavating and in laying the concrete, cofferdams were used for three of the abutments, but for the south abutment on the New York side only a few sheet piles were used to prevent the loose sides of the cut from washing in.

draw-bar stop. The rear draw-bar stop is formed by the end of the oak filling piece behind the draft beam. The ends of these filling pieces are covered with the malleable iron caps, A, Fig. 1. These caps protect the ends of the filling timbers which thus constitute a strong draw-bar stop. The position of the follower plates, C, against the stops is shown in Fig. 2.



On the outside of the draft beams are projections through which the continuous draft rods, B, pass and are held by nuts on the ends of the rods. These rods extend from the draft beams to the nearest needle beam through which they are bolted. From one needle beam to the other are auxiliary rods which are bolted through the needle beams, thus taking the strain off the beams. The use of these draft rods in sections permits a better adjustment than with continuous ones.

The Detroit River Bridge.

We have just received from Washington a pamphlet which contains a capital argument in favor of the project of the Michigan Central Bridge Co. for a bridge at Detroit. The pamphlet is evidently prepared for the consumption of the United States senators and representatives and should have an excellent effect upon them. The magnitude of the great transportation interests coming to the river at that point is first set forth, and then follows a statement of the engineering aspects of the plan.

The bed rock is nearly level and is about 102 ft. below mean water surface. Above it is a stratum about 20 ft. thick of loose material, being quicksand, gravel, clay and boulders. Above this, to the river bed, is clay, with some sand and gravel. The foundations of the piers must go to bed rock. About \$175,000 was spent some years ago in the effort to drive a tunnel across, but the headings did not get nearer than 1,700 ft. from each other. Mr. Chesbrough, who conducted the operations, estimated that a tunnel would cost between \$7,000,000 and \$8,000,000. About six years ago a party of experienced engineers and contractors who had been engaged in public works of the largest class, including tunnels and submarine work, examined the tunnel project. They reported that the material from the bottom of the river to points 10 to 25 ft. above bed rock was too soft in many places to sustain a railroad tunnel if it could be built. Below this were boulders and glacial drift, bedded in clay of such extreme hardness that the shield method of construction would be of doubtful practicability. Under this clay is quicksand, varying in depth from 5 to 7 ft., bearing a large amount of water. It would be practically impossible to build a tunnel in the bed rock, owing to the great depth. Furthermore, there is reason to suppose that gases would be encountered, and that they might be found under such pressure as would make it impossible to proceed with the tunnel work. After a careful canvass of the conditions, it was decided to abandon the idea of a tunnel.

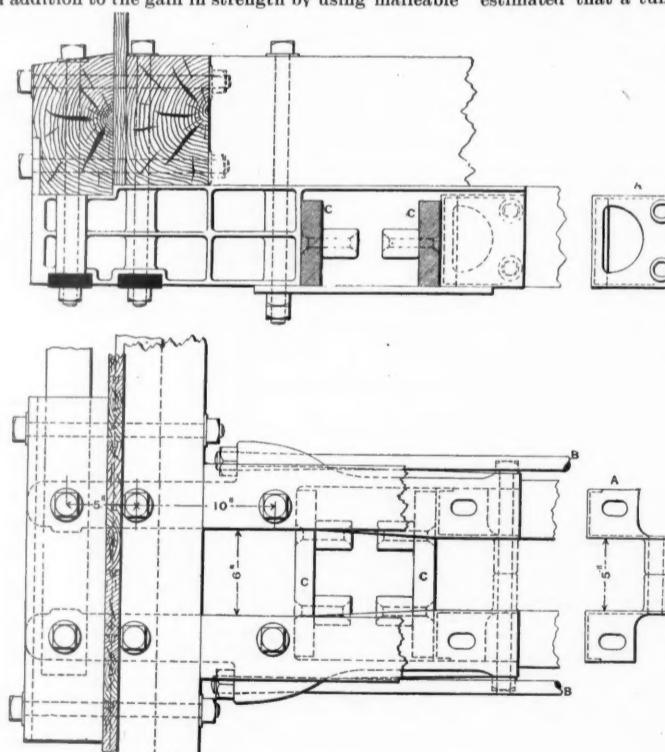


Fig. 2.—Gould's Malleable Iron Draft-Beam.

iron instead of oak, they have a continuous draft feature designed to remove the strain from the frame of the car. This feature differs from the "American continuous" in that the draft rods are fastened to the draft beams instead of to the drawbars, and are divided into three parts instead of being continuous from one end of the car to the other.

Fig. 1 is a drawing of one of the draft beams, and Fig. 2 shows it applied to a car. There are two of these, one right and one left, on each end of the car. They are put under the center sills, where the ordinary draft timbers are put, and end flush with the outer face of the deadwood. Bolts through center sills, end sills and deadwoods hold them in position. A web immediately behind the bolt through the center sill forms the forward

The proposition for a charter for a bridge has been before Congress several times and was referred to boards of engineers in 1873, 1880, 1889 and 1890. In 1873 the board gave the opinion that a clear span of 400 ft. would not seriously injure navigation; in 1880 a board of army engineers was of the opinion that there would be no material difficulty in passing clear openings of 300 or 400 ft. whenever it was safe to navigate the river at all; in 1889 another board gave the opinion that a high bridge with a span of 1,000 ft. would not have prohibitory objections. It must be remembered that the proposition now is to have a clear span of 1,100 ft. and a clearance of 140 ft. above mean water. On the Canadian side there will be a span over 500 ft. long in the clear and most of the upstream traffic will go through this span.

The pamphlet contains a diagram cleverly showing, for the better comprehension of the Congressmen, the comparative dimensions of the bridge and the Capitol at Washington. The total length of the Capitol fills only 751 ft. of the 1,100 proposed. The flags on the top of the wings do not come within 22 ft. of the clearance of the bridge. The top of the statue of Freedom above the dome is 29 $\frac{1}{2}$ ft. below the tops of the towers of the bridge. These towers would give admirable means of lighting the channel, making it actually considerably safer than at present. Moreover, the bridge would do away with the constant passing of the car ferry-boats, which are considered to be far more dangerous and troublesome to up and down navigation than the bridge piers could possibly be.

The bill now before Congress has the approval of the Chief of Engineers and the Secretary of War, and the project is approved by the Governor of Michigan, Ex-Governor Alger, the Mayor of Detroit, Mr. Peter White, one of the largest vessel owners on the lakes and many other people of similar standing. It is opposed by the Lake Carriers' Association, which, on principle, opposes not only bridges but any proposed methods of navigation which would interfere with existing interests.

The McMahon Dump Car.

[WITH AN INSET.]

The accompanying engravings show an improved form of operating mechanism for dumping cars which has been devised by Mr. William McMahon, of Rahway, N. J., and is now being made and introduced by The Dumping Car Improvement Co., Havemeyer Building, New York City. The officers of the company are: Richard Dixon, President; W. S. Perry, Treasurer, and A. J. I. Bradley, Secretary. J. C. Gilbert is general sales agent.

One of the difficulties in using the ordinary hopper-

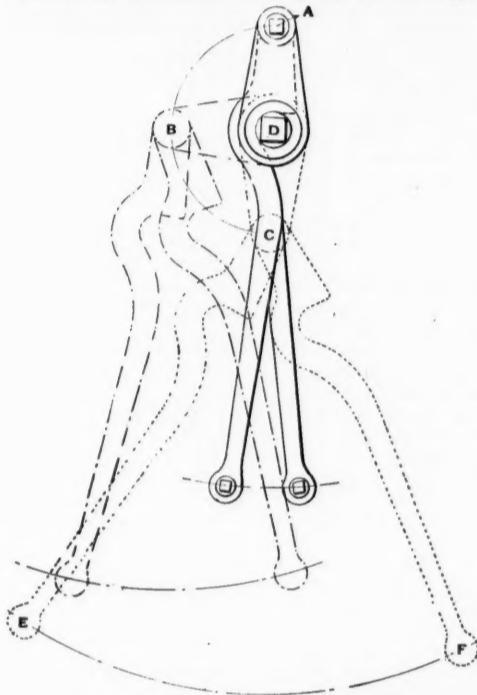


Fig. 8.—Details of Operating Mechanism.

bottom coal cars, the gates of which are lifted by chains and which drop by gravity, is in opening the gates of the hopper when the coal is frozen about the chains, preventing the gates from dropping. In this event, one must often wait for a thaw or thaw the coal out by artificial means. Attempts to break the coal away from the chains with bars result in more or less injury to the car.

The principle of the improvement designed by Mr. McMahon is about as follows: By substituting for the chains, levers with which a positive downward thrust can be obtained, gravity is no longer relied upon to open the gates, this being accomplished instead by the powerful and positive action of the levers. This appliance costs but little more than the old chain system. The mechanism is compact and simple, and is placed entirely inside of the side sills of the car. It does not occupy any space within the hopper; may be placed on any gondola hopper car, and can be applied to new cars at a slight expense above the chains. This mechanism will extend the life of old cars as the strain of opening the gates and the breakage of the hopper by the use of crowbars, chisels and other means necessary to force the gates open when they are frozen, is entirely obviated.

In applying the device the horizontal shaft now used is retained as part of the appliance, a short arm or crank being keyed to it near each end just inside the side sills. This short arm has pivoted to it at the top two long arms with cutouts or shoulders, fitting in on the shaft when they are in an upright position, as shown in the engravings. The lower ends of these hangers or arms are connected with the gates. When the short arm is thrown off the center it carries the hangers with it, thereby forcing the gates downward, the hangers spreading and forcing the gates fully open by a single turn of the shaft, the leverage being so great that the instant the hangers are thrown off the shaft the doors are forced open, even though the interior of the hopper be frozen,

and this without breakage or injury to the doors or any other part of the car. This is shown in Figs. 1 to 4.

Another method of applying the device, shown in Figs. 5 and 6, consists in extending the shaft from one side sill to the center sill only, the device being placed in the center and operating between them. The short arm which gives the throw to the hangers necessary to open the gates, is housed with a small "A" brace 5 in. wide, about 2 ft. long, and about 9 $\frac{1}{2}$ in. high. This brace runs longitudinally with the sills and the mechanism is housed at the bottom by the insertion of two pieces of planking under each stringer, running longitudinally from one end of the hopper to the other.

The application of this device in either of the methods described does not change in any manner the general structure of coal or other hopper bottom cars. It can be applied to old or new cars without cutting away or in any way weakening or interfering with the structure, and it does not displace the air-brake cylinders or other mechanical parts now in use upon the cars. No levers, chains or other obstructions exist within the hopper except the shaft operating the mechanism, and when the device is applied to the center of the car (see Fig. 5) this shaft only extends half way across, consequently an opening or discharging capacity representing the full width of both gates is obtained.

The device has been operated with complete success on several coal roads. On Feb 17, six cars fitted with the improvement were tested at Perth Amboy, N. J., by the Lehigh Valley Railroad. These cars were loaded with

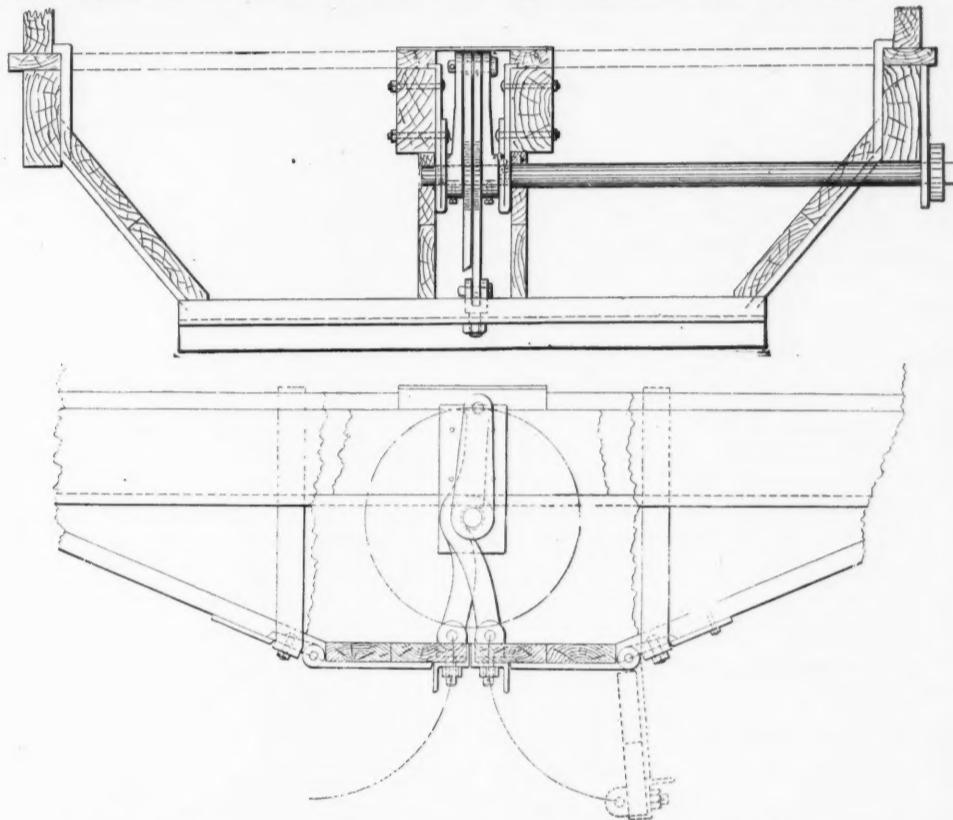


Fig. 9.—Arrangement of Device with Mechanism at Center and Below Side Sills.

coal, frozen to a solid mass, the temperature at the time of the test being about 6 degs. below zero. The cars were easily opened by two men, the quick and positive action of the gates in opening being particularly noticeable. Cars equipped with the device have been successfully tried on the Jersey Central, the Delaware, Lackawanna & Western, and other roads. The Delaware & Hudson has also had complete success in trials of the device.

On the Lehigh Valley the device has been applied to the double hopper cars used by that company. On the gondola cars of this company a modification of the general arrangement of the levers has been to place the shaft, and the operating mechanism, in the center below the side sills. See Fig. 9.

By referring to the small engraving, Fig. 8, the positions taken by the levers, at different points during the process of opening, are clearly shown. The joint A, which is in its highest position when the gates of the hopper are closed, descends to B as the crank on the shaft D is turned, and when the gates are fully open, as shown at E-F, the joint A has taken the position C. Owing to the great force which is secured by the leverage of the opening crank, and the strength of the operating levers themselves, the gates of the hopper will be positively opened, as soon as the opening crank is turned.

This device is not only valuable for coal dumping cars, but it will prove of great importance in transporting and handling grain, sand, or other fine material, as the joints of the gates are tight and remain so, preventing loss by leakage even when fine material is carried.

Railroad men will doubtless remember the car exhibited by the above company at Alexandria Bay last June, and which attracted such attention. Since then, the improvement has been carefully investigated by a large number of coal roads, and the resulting orders for many hundred cars prove it to be well worthy of careful attention from all railroad officials interested in the economic handling of coal and grain.

Kansas Railroad Commissioners' Report.

The Railroad Commissioners of Kansas, Samuel T. Howe, Joseph G. Lowe and J. M. Simpson, have issued the thirteenth annual report of the Board, which is for the year ending Nov. 30, 1895, with statistics to June 30, 1895. These commissioners have only been in office since Feb. 6, 1895, and they are all new to the duties of a railroad commissionership; but the report is comprehensive and compares favorably with the average of such documents. The commissioners evidently have given thorough and intelligent study to the problems before them. Most of their discussions are characterized by good judgment and intelligent public spirit, though the report is too long. The report proper occupies about 80 pages. As these gentlemen of Kansas, like all the rest of us, are hampered by the fact that most of the wise sayings concerning railroad problems have already been said, they can hardly expect the people of their state to read their extended discussions with remarkable avidity.

The larger part of the matter in the individual reports of railroad companies has been omitted from the publication, and the statistics in those reports are summarized and edited by the Commissioners. Even after this condensation the reports of the roads occupy over 80 pages, lists of officers, detailed lists of lines, brief histories and a condensed general balance sheet being given. Following this matter come the statistical tables, filling about 70 pages, and then 50 pages of decisions of the Board. Fifty pages are taken up with a topical index

of all the reports made by the Kansas Railroad Commissioners, beginning in 1883.

The first subject discussed in the report proper is the regulation of carriers' charges. The general principles of state control over rates are set forth and the desirability of harmony in the laws of different states is discussed. The commissioners would be glad to see the annual convention of the railroad commissioners at Washington changed into an official body, recognized by the legislatures of the states, to take action looking to unity of railroad laws throughout the country. The policy of regulating railroads by means of a commission is discussed at length, copious extracts being given from Charles Francis Adams and from Frederick C. Clarke's work on state railroad commissions. The effectiveness of a railroad commission will be proportionate to the degree of confidence felt in it by the public and the railroads, and the state will give power to a commission accordingly. To merit confidence a commission must have special knowledge and every board should therefore be so organized as to have upon it at all times one or more experienced men. The history of the Kansas commission is held to indicate a successful career. During the 13 years of its existence it has disposed of 1,194 cases; of these 253 were dismissed, 354 were decided in favor of the railroads, 104 were settled by agreement and 483 were decided against the railroads. Only 22 of the latter have been reported as disobeyed. There has been a demand that the board have additional powers, but the commissioners think that this need, so far as it is real, may be met by a very little legislation. The Supreme Court should have power to compel compliance with the Board's recommendations, by mandamus, and the findings of the Board should be made *prima facie* evidence in the courts. This recommendation is advanced only on the supposition that the law also enforces the previous recommendation (that the commission always have upon it experienced men).

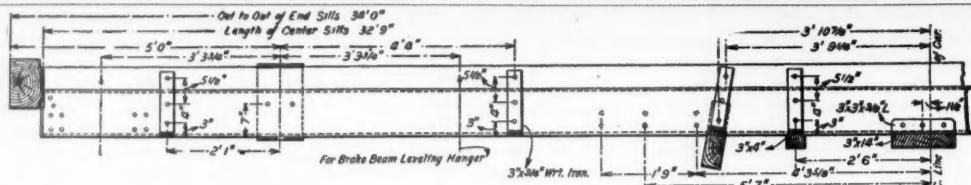


Fig. 1.

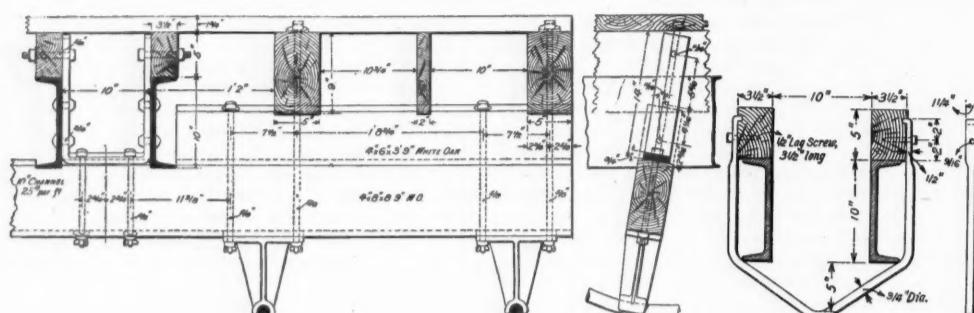


Fig. 2.

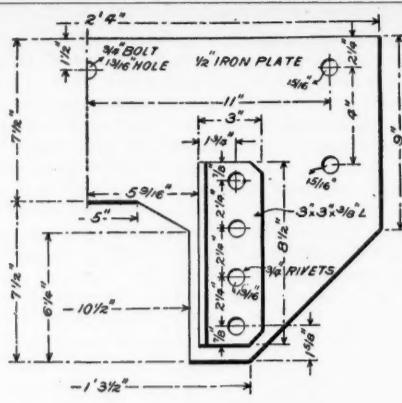


Fig. 6.

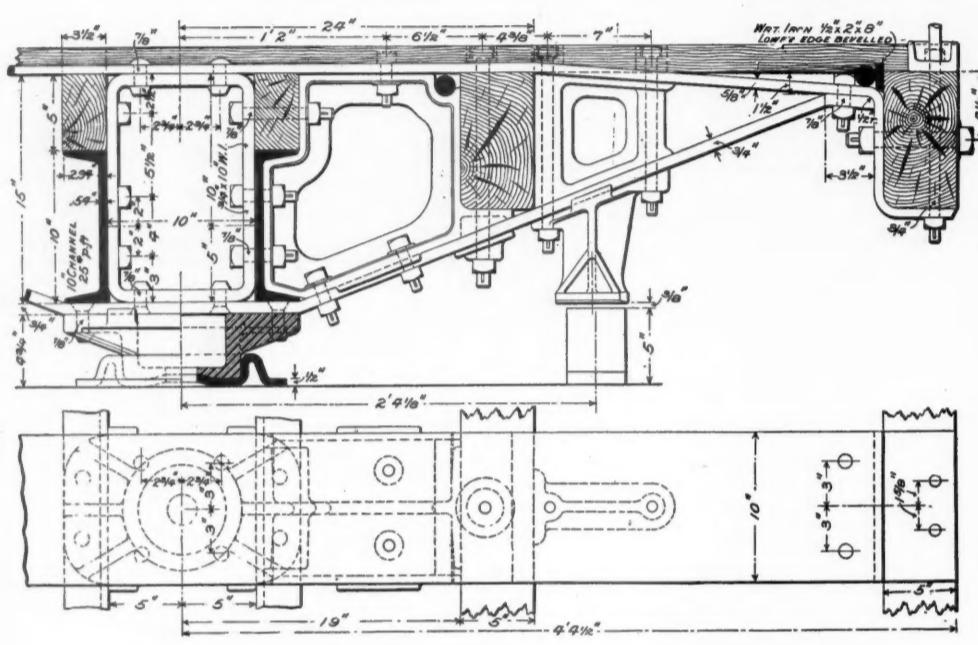


Fig. 4.

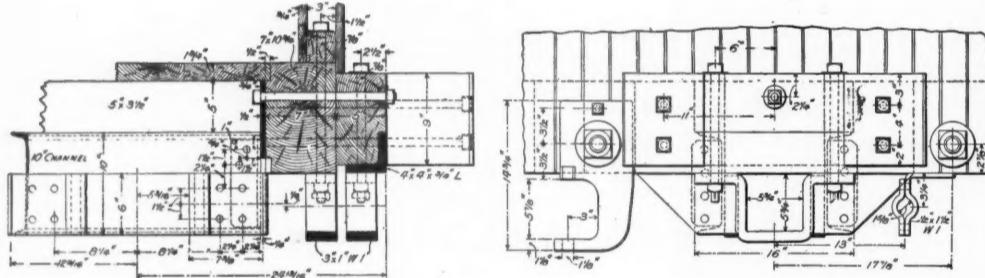


Fig. 5.

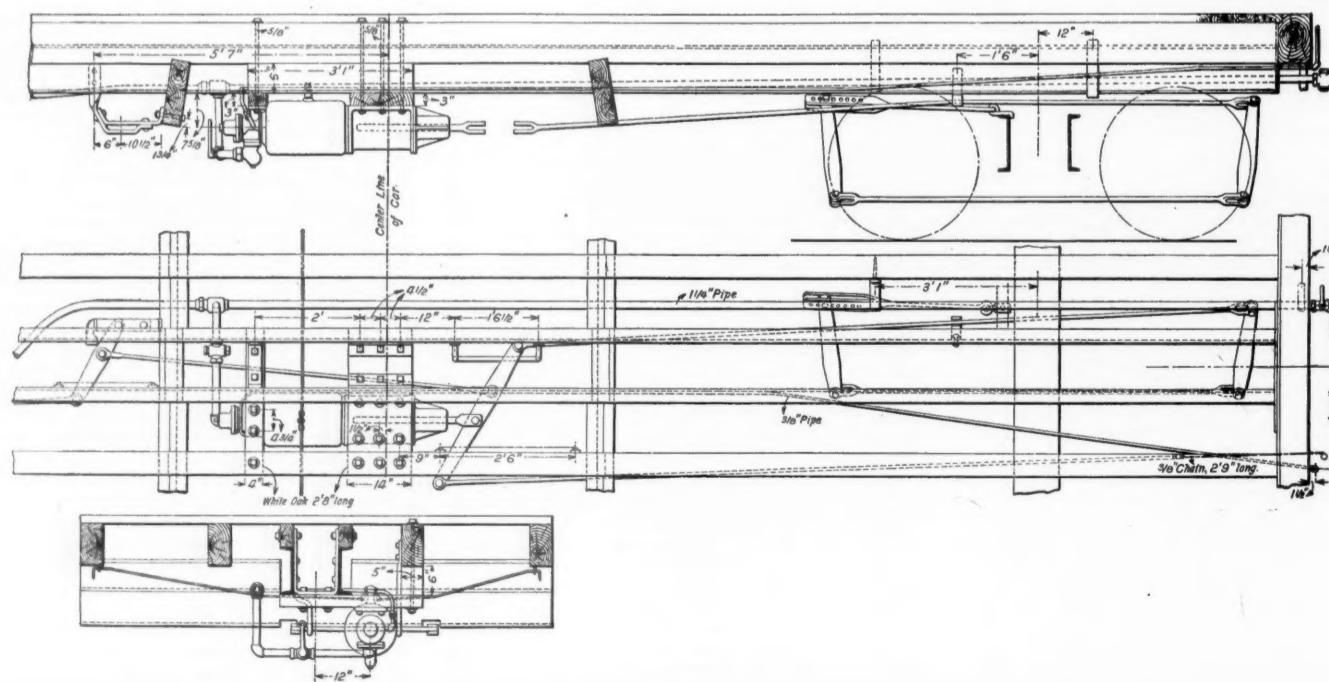


Fig. 7.

30-Ton Box Car with Steel Center Sills, Chicago, Burlington & Quincy Railroad.

3½-in. x 5-in. pine filling pieces on top of them. The connection of the center sills with the end sills is of course also changed, owing to the substitution of steel for the wood. This use of steel center sills in freight car construction is a noticeable advance, and will, doubtless, stiffen the car materially, making it better able to stand the severe strains which it gets in service. The shocks to which cars are subjected while switching in the yards are not often fully realized, and the use of these steel sills with the draft gear attached directly to them, as is done on the C. B. & Q., thus obtaining continuous steel draft timbers, makes an exceptionally strong construction and should fully justify the expectations of the designers by increasing the life of the car and decreasing the cost of repairs.

Fig. 1 is a half longitudinal section, and Fig. 2 a half cross-section near one of the needle beams. The center sills are 10-in. steel channels, weighing 25 lbs. per foot, and placed with their flanges outside. They are spaced 10 in. between the webs, and are firmly held in position by "U" wrought iron straps riveted between them. There are eight of these straps, ¾-in. x 3 in., spaced as shown, with their ends projecting above the channels and bolted to the 3½ x 5-in. filling pieces. This secures the filling pieces to the sills. In Fig. 2 the strap located at the needle beams is shown, and is bolted to it with two ¾-in. bolts. Fig. 3 is a detail of the hanger to which the brake beams are attached. These are placed 3 ft. 3¾ in. each side of the body bolsters.

A detail of the bolster is given in Fig. 4. The principal difference between this bolster and the one shown on page 55 of the *Railroad Gazette* is the substitution of ¾-in. x 10-in. wrought iron pieces bent in a "U" shape for the cast-iron filler between the center sills. There are two of these wrought iron pieces, the upper one being inverted and riveted to the top plate of the bolster, while the lower one is riveted to the bottom plate of the bolster. The legs of both of these are bolted to the center sills. The distance between the bolster plates, 15 in., remain the same. It will be noticed that there are no holes punched or drilled in the flanges of the 10-in.-channels throughout their full length, and that all attachments for body bolster, brake gear, draft gear, etc., are riveted or bolted to the web of channels.

The connection of the center sills with the end sills is shown by Fig. 5. To each of the center sills is riveted, with ¾-in. rivets, a 3-in. x 3-in. x ¾-in. angle 8½ in. long. The other legs of these angles are riveted to a ¾-in. wrought iron plate that is bolted to the end sill. This plate is shaped as shown in Fig. 6, the center of it being cut away for the drawbar. The center sills project 6 in. below the end sills and carry the draft gear, which is the standard C. B. & Q. design previously described. As has been said, this attachment of the draft gear directly to the steel center sills, which thus serve as continuous steel draft beams, is admirably adapted to withstand the severe service strains. The parts of the draft gear being few and simple, and their attachment to the sills very strong, there is no reason why the cost for any repairs should not be minimized. The deadwoods and cast-iron dead blocks are the same as before.

The car is equipped with Westinghouse quick-action automatic brakes, outside hung brakes being used. Fig. 7 shows the arrangement and attachment of these brakes. The 3 in. x 14 in. block carrying the cylinder is bolted to two 3 in. x 3 in. x ¾ in. angles, which are riveted on to the inside of the center sills, while the 3 in. x 4 in. piece supporting the auxiliary reservoir is bolted to one of the "U" wrought iron straps between the center sills. The drawing shows clearly the arrangement of levers and rods. The cars are braked to 80 per cent. of their light weight.

The Pancoast Ventilator.

In our issue of Nov. 6, 1891, appeared an illustration of the Pancoast system of ventilation for fruit cars, the invention of R. M. Pancoast, C. E. Since that time some of the principles involved have been used by Mr. Pancoast in different patents for ventilators for use on passenger cars, and the illustration is a sectional view of the form now being introduced by the Pancoast Ventilator Co., of Philadelphia.

This ventilator consists of two cones or deflectors suspended from four brass brackets, ½ in. thick, set edgewise to offer the least resistance to the passage of air. The upper cone, which projects slightly beyond the lower, acts as a deflector of down currents and rain from the neck of the opening, but does not interfere with the egress of air, which is provided for by the lower deflector. To prevent choking when there is a lack of draft, the exit passage is made of the same area as the neck, with the least angular and the shortest lateral divergence. The ventilators are made of black metal galvanized, insuring good protection against rust. It is claimed that the ventilator is storm and cinder proof. It can also be used in connection with power exhaust fans.

Ventilators of cast iron are made for round houses,

train sheds and depots. The company has received trial orders for several with 18-in. necks, the weight to be less than 200 lbs. each.

The Utah Salt Storm.

On the afternoon of Jan. 1 last a very peculiar rain storm occurred in eastern Utah and western Wyoming, along the Union Pacific Railway, extending from Ogden, Utah, to Evanston, Wyo., a distance of 75 miles, and Mr. L. H. Korty, Superintendent of Telegraph of that road, sends us the following particulars of it: The rain consisted of salt water or brine. The clothing of persons exposed to the shower had, when dry, the appearance of having been sprinkled with whitewash. The windows in the stores and residences at Evanston were so encrusted with salt deposit as to make it impossible to look out. Dr. C. T. Gamble, of Almy, Wyo., a gentleman of undoubted reliability, states that the storm deposited in Almy alone 27 tons of salt. "This assertion may appear fabulous," says the Doctor, "but, nevertheless, it is true, as it has been proved by carefully estimating the quantity on a given surface in different parts of the camp. The area of Almy is something over nine square miles, and three tons to the mile would make 27 tons of the sodium deposited. The salt if collected and sacked would make 10 ordinary wagon loads. Those who doubt the above statements can do the figuring."

The salt storm lasted about two hours. After it had ceased raining the sun came out and as fast as things dried they turned a whitish color, and it was found that everything was covered with a thick coating of salt. Cars, buildings, trees, telegraph poles, insulators and wires all looked ghostly in their white coats. Through Weber Cañon the salt storm turned into snow later. A peculiar effect of the salt deposit on the telegraph poles, arms and insulators through Weber Cañon was noticed in operating the wires. During the day, when the sun came out, the wires worked clear and without interruption, while at night when it turned cold the wires were rendered unserviceable, which was attributed to the fact that the snow, having melted during the day-time and again freezing at night, created a moisture in conjunction with the salt deposit underneath so as to entirely destroy the insulation of the wires. After several unsuccessful attempts to remove the cause of the trouble, an engine with a pump and a long hose was sent over the line and the deposit thoroughly washed off the poles and fixtures for a distance of 40 miles. The wires of the Rio Grande Western Railway between Ogden and Salt Lake City were slightly affected the same way, as were also those of the Southern Pacific for a short distance west of Ogden.

An officer of the Rio Grande Western Railway gives us some additional particulars. He says:

"While I cannot certify as to the amount of salt deposited in Wyoming, it is a common occurrence when the winds are from the west and sweeping over the body of the Great Salt Lake, for the rains and snows to be more or less impregnated with salt. After such a storm from the west the windows, porches, etc., of Salt Lake City residences are thinly coated with salt, so that I do not doubt the statement made by Dr. Gamble. I have known the salt to be carried a distance of 60 or 70 miles. It is not noticeable during the storm period, but only after the moisture has evaporated and the salt or solid matter is left deposited. You probably know that the Great Salt Lake is the saltiest body of water in the world, exceeding by several degrees the water of the Dead Sea, consequently it is easy to appreciate that the winds would carry the salt spray over a great distance of territory."

Air-Brakes on Freight Cars.

At the January meeting of the Western Railway Club the discussion of Mr. Waitt's paper on Air-Brakes on Freight Cars, was continued.

Mr. WAITT showed a few specimens of burst hose. One of them was a hose badly kinked, but which had burst at a place quite away from the kinked places. Another one which had been in service two years, and was not kinked or cracked badly enough to expose the canvas at any place, had burst and wrecked several cars. Another badly kinked hose had burst near the kink. These show the difficulty of establishing any theory of the causes of ruptures.

Mr. J. F. DEEMS (C. B. & Q.) said that in June, 1894, the repair yards of his road had been piped and arranged to test and care for air-brakes in a systematic way. Rules were posted for the guidance of the car men. One of them required inspectors to look out for the stenciling on triples and cylinders, and when the stenciling did not show the parts to have been cared for within the M. C. B. limit of time the car should be marked "bad order" and sent to the repair track. He was surprised to find the number of cars not stenciled to show date of cleaning and also the number showing that this work had not been done for three or four years. He then prepared blanks classifying cars under "fair," "bad" and "very bad" and to show the date of last cleaning. Under fair would be arranged the cars in which the brakes were in average service condition; under bad those on which the brakes worked, but so sluggishly as to cause rough handling; under very bad those where the brakes would not work or were not fit to run. It was found that 24 per cent. of the whole number had no date, and presumably had not been cleaned at all, and 65 per cent. of these were classed as very bad. All of those bearing date of 1890 and 1891 were classed as very bad. On those bearing date of 1892, which were 30 per cent. of the total,

50 per cent. were marked very bad. Of those dated 1893, 40 per cent. of the whole, only 5 per cent. were marked very bad. Out of the total of 150 cars so analyzed only 34 per cent. had been cleaned within the time limit fixed by the Association. He concludes that one year is quite long enough to let triples run without being cleaned, and that up to the early part of 1895 little attention had been paid to following the rule laid down by the M. C. B. Association on this point.

He concludes further that the presence of dirt and grit in the triple is of more importance than all other defects combined. One defective arrangement of train piping is, he thinks, having all the pipe lead downward toward the triple.

Mr. KINYON (locomotive runner, C. M. & St. P.): It is his experience that when a hose gives out while a train is moving the brake application is no more severe than would have been the case in a service application of the engineer's valve by a continuous drawing of say 20 lbs. He showed a safety air-brake coupling devised to do away with the angle cock. The substitute for the angle cock is automatically opened in the act of coupling up. In uncoupling the valve is forced to a closed position. When a coupling is pulled apart by a break-in-two the valve is left open, allowing the air to escape. This feature is positive. The cost of this coupling is less than the present device and it is interchangeable with it.

Mr. A. E. MANCHESTER (C. M. & St. P.): Since the discussion began he has made up figures from records covering 19 days. Two hundred and twenty-five defective hose were received at the shop from the entire system; 26 per cent. were torn in two, 67 per cent. were burst, and about 28 per cent. were burst on account of kinking. Eight per cent. of all hose scrapped was on account of damaged couplings. The majority of these were damaged at the lip that holds the stop pin. This is generally done by the brakeman in coupling.

Mr. GIBBS (C. M. & St. P.): This matter of hose is one of the most puzzling subjects he had ever taken hold of. No definite information is to be had as to the methods of making hose, its composition and the service to be expected from it. He hoped that the discussion would serve to bring out a paper from some rubber manufacturer, giving details as to the make-up of various kinds of hose and the influence of quality and manufacturing methods upon its life. There seem to be no standard of quality to measure hose by and no laboratory or shop test that will give its probable life.

Mr. G. W. RHODES (C. B. & Q.): The C. B. & Q. has abandoned the use of dummy couplings, and since the summer of 1894 has applied none. They began in 1893 to insist on hanging the hose in the dummy couplings, and made it a punishable offense for any hose to be found in the yard not hung up when the air was not in use. Trainmen usually got ten days' suspension for such an offense. As a result, the hose was always found hung in the dummy couplings when the cars were standing in the yards. This practice so largely increased damage to the hose, and the hanging was done so imperfectly, that the dummy was abandoned. He is not prepared to say that this is the best thing to do, but so far as getting dirt into the train pipe is concerned, there is no argument in defense of the dummy. There is greater liability of getting dirt into the triple by hanging hose in the present imperfect dummy coupling than by letting it hang down.

Mr. BARR (C. M. & St. P.): Since Mr. Rhodes called attention to the fact that the C. B. & Q. had decided to abandon dummy couplings Mr. Barr has paid considerable attention to the matter, and has finally concluded to do the same thing. He knows of no argument that would indicate that hose hanging in the dummy coupling is in a better position than if it is allowed to swing. In addition, the kinking of the hose is a serious matter. Instructions have been given over the entire St. Paul system to cease the use of the dummy coupling.

Mr. WAITT called attention to the fact that a decided majority of opinion is still in favor of the use of the dummy coupling.

New York Central Engine No. 870.

Locomotive 870 of the New York Central & Hudson River Railroad has become famous as the best-known representative of the class of big 8-wheelers which haul the "Empire State Express." This train has now been running over four years, summer and winter, with admirable punctuality and regularity. The speed for 440 miles, including four stops, has been 50.7 miles an hour. Recently this has been increased to 53.33 miles an hour. Mr. Buchanan sends us the following facts concerning No. 870:

The mileage made by this engine while out of shop was 167,176 miles. The wear of the cylinders during this time was extremely small, about 32 inch on one side and less than that on the other. This small wear is attributed to the extension of the piston rod through the front cylinder head. Three cast-iron spring rings are used in the piston.

This engine ran on trains 18 and 51, between New York and Albany. The time of the train 51 going north is 2 hours and 40 minutes; distance 143 miles; weight of train exclusive of engine and tender 188 tons; train 18 going south, time 3 hours and 25 minutes; weight of train exclusive of engine and tender 366 tons; the engine and tender in working order weigh about 100 tons. The running time is made regularly, and sometimes time is made up. The wear on the tires of this engine has also been very small.





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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisement.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

A paragraph has appeared in a number of the daily papers to the effect that a new fuel which is now being made experimentally in Reading will be tried on several Philadelphia & Reading locomotives. It is made by compressing culm into small disks about an inch in diameter, and the newspaper statements are that it will cost about one dollar a ton less than coal and will do the same work. If the tests to be made on the Reading and on other railroads are successful a plant will be erected to manufacture the fuel on a large scale, and, the paragraph adds, "a use for the immense quantities of culm now accumulated near the mines will at last be found." It is quite true that this fuel is being experimented with on a shifting engine at Reading, but the judgment of officers of the Reading road is that there is no chance that it will be found available for a locomotive fuel. The economics already relied on that road in burning buckwheat and rice coal in the Wootten firebox are so great that there seems no reasonable chance that it will be found profitable to use slack in any other form. The culm piles in the anthracite district are fast being bought up by different parties who build washing plants and get out all the available fuel in the form of rice, buckwheat and pea coal, and this can be burnt without further preparation on the broad grates now used.

The Railroad Commissioners of Georgia have issued new rules for demurrage charges, numerous complaints having been received from wholesale grocery-men and lumbermen in various sections of the state. The new rules require any railroad making demurrage charges on freight cars to make the rates uniform to all persons at all places on its lines. Every road is prohibited from making such charges at one place and not at others. Consignees who are notified by mail must be allowed 24 hours' more time than if served with a personal notice. The spirit of this rule is commendable, and if demurrage charges are to be kept up and the former abuses in freight car service are to be permanently done away with, it must be carried out. The demurrage managers, at their New Orleans convention (reported in another column of this paper) had this subject up for discussion, and they seem to have based their conclusions on the ancient principle that it is nobody's business how they administer their demurrage rules; that the Railroad Commissioners have no right to interfere. It seems to us that this attitude is wrong, as a matter of policy, to say nothing of legality. It is true that State Railroad Commissioners often try to accomplish impossibilities, prescribing rigid rules where only flexible ones can be enforced, but it is to the interest of the railroads to have the demurrage principle extended as thoroughly as possible, at small and large stations alike, and in the long run the Commissioners are more likely to help than to hinder the movement. There are many unavoidable circumstances constantly arising which make the collection of demurrage more or less inequitable, but the presence of this difficulty should not be allowed to prevent a courageous prosecution of the reform. The demurrage collector has a

never-ending fight, not only against persistent consignees, but with railroad officers who like to manipulate demurrage charges as a means of rate cutting; but so have other railroad officers whose duty it is to prevent rate cutting. Restoring demoralized rates is a task that has had to be done over again a hundred times, and it may have to be done a good many times in the future; but no one thinks of abolishing tariffs just because it is hard to maintain them. The contest to keep demurrage associations alive is essentially a contest to prevent secret discrimination in transportation rates, as experience in several cities has recently shown, and it is one in which the upright railroad manager should invoke every available aid. It is not unlikely that state regulation, where the Commissioners are at all reasonable, will be of appreciable assistance in establishing and maintaining economical methods in handling freight cars and preventing their use as storehouses.

The Chicago butter men are again butting against the conditions which are gradually converting Chicago into a way station; not, of course, such a way station as the St. Louis drummers would like to make it—one where they would have to inquire as to the merits of the hotel before they would dare to stop off there—but a way station as regards through freight trains carrying produce from western farms to eastern cities. Some months ago these dairy merchants complained that Iowa producers dared to load refrigerator cars right through to New York and were doing it, right along; and that the railroads abetted the crime by charging less rates than for freight taken out of the cars at Chicago and put back in again. But the trouble is not remedied and now they have spoken again, and this time they mean business. They have banded together for a year, to "use every legal means in their power to divert traffic from any road that directly or indirectly, discriminates against Chicago by giving any lower rate from the West, Southwest or Northwest than the tariff rate to Chicago, plus the rate from Chicago to Eastern points;" and in their letter to the railroads they say: "We expect you to help us in this honest and equitable effort, and want from you a written pledge to that effect. Any evasion or refusal to subscribe to the above will not be acceptable. Your immediate attention and reply is requested by the committee." And they say that they already have assurances of help from certain railroads. Thus combined, they will boycott any road which dares to compete with roads around Chicago. If, for instance, the Michigan Central finds that it can, by reducing the rate, get some shipments at Joliet which otherwise would go East by some line farther to the south, it must beware lest Chicago shipments be withdrawn from it; although, by denying itself the profit on the additional shipments, it helps Chicago just as much as it would if it threw a lot of money into Lake Michigan, and no more. We are sorry for the middleman who sees his business seek other channels; but we would remind him that the railroads are not his chief enemies. Producers are always going to seek the shortest cut to the consumers, and if they do not find what they want they will provide it themselves. If existing railroads do not in the long run meet the legitimate demands of farmers and manufacturers the latter will build railroads themselves. The mottoes, "From Maker to Wearer," "Forest to Factory," "Field to Table," and others like them, are not meaningless catchwords, but often represent real improvements in commerce, and such improvements, honestly carried out, must largely prevail. We advise these dairy merchants to adopt some such motto; for instance, From Cow to Consumer, or From Barnyard to Boston. If they do not they will find some of their competitors getting the better of them. After they have worked under the new theory for a while they will wonder that they ever had the assurance to call their present demand "equitable."

Readers interested in signaling will note, from a report printed in another column of this paper, that on some railroad or railroads in Michigan it has been decided that a distant signal is an unnecessary luxury. The proposition to abandon such signals has been laid before the mechanical engineer of the State Railroad Commission and he approves it. He finds the discipline of signalmen so poor that distant signals are dangerous unless the operator is prevented by mechanical means from taking away the right to the road (after he has once given it to a train) while the approaching train is between the distant and the home signal. Presumably the signals referred to are at crossings. We are glad to see that Mr. Moore recommends electric locking, for that is a simple safeguard which does not cost much, and which if effectually maintained helps to give

confidence to the enginemen of fast trains and to all concerned; and very likely he is right in supposing that some of the railroads of his state get so little value out of their common distant signals that they might as well save the expense of erecting and maintaining them. But it should be clearly recognized just what this action means. We assume that the proposition is to make the distant signal arm fast in the horizontal position. A distant signal with a fixed arm is about 65 years behind the times. That is, it is practically the same kind of signal that the engineers devised for themselves when the first grade crossing was made. They did not go to the expense of putting up a post costing 50 or 75 cents; they made use of a fence post, a barn, a rock or whatever object they happened to find at the point where the signal was needed; but they had the signal, and it served them well. The runner who made use of a pile of boards, and got fooled one foggy day when the boards had been carried off, didn't begin just right, but doubtless he profited by that little bit of experience. But a good distant signal is wanted for its value when it is pulled to "all-clear," and a plain "slow-board" cannot be used for that purpose. A fast train approaching a crossing can save some time, if the fact that the crossing is clear can be known 1,000 ft. before reaching it, that can be saved in no other way. If those Michigan people have no trains so fast but that they can always afford to run very slowly on approaching fixed signals, we do not blame them for saving the expense of distant signals; but the announcement in Mr. Moore's report sounds rather queer, coming from a state where it has been proposed to put in track-tanks to enable trains to run 200 miles without stopping. And if any one deems electric locking an indispensable adjunct, he might take a look at the experience of the last 30 years in England where electric apparatus of this kind may almost be said to be unheard-of. It does require good discipline to keep signalmen alert and vigilant, but the English, and in fact most American roads, have had no special difficulty in maintaining it to the extent necessary to meet the demand here referred to. Chicago is the only place that we have before heard of where people who put in distant signals got sick of them.

The Carriage of Bicycles.

Another set of interests is now beginning to claim, and to claim somewhat loudly, that its rights must be protected against the railroads; with the spread of the use of the bicycle a new demand has come on the railroads. Riders want their wheels carried, long or short distances, by rail, and at first the railroads carried them free. The baggageman took the wheel into his car, carefully stood it where it would not be broken and handed it out to the rider at the station of his destination. Perhaps the baggageman got a quarter for his trouble and perhaps not; perhaps he grumbled or perhaps he was cheerful; but at any rate the wheel was carried and the rider was satisfied. But the number of bicycle riders has increased enormously within the last two years (it has been estimated that 500,000 wheels were sold in 1895) and in many regions the tax on the railroads for car room and for labor has become very severe.

A bicycle is a bad thing to handle to and from the cars. It cannot stand alone; it cannot be piled on trucks to be carried back and forth, it must be handled carefully in the car; it takes up a great deal of floor space and nothing can be put on top of it. Unless it so happens that it can be put on top of other baggage it takes the whole space from the floor to the roof of the car. To be sure, some railroads have fitted up baggage cars with hooks by which bicycles can be hung from the roof, leaving the floor free, and this helps matters a good deal. But the wheel is still a bad thing to stow and a very awkward thing to handle; so if many bicycles are offered for carriage the additional cost to the railroads for men to handle them and for car room becomes a serious matter. We have seen of a Monday morning on a railroad doing a heavy suburban business into New York, bicycles arriving at the terminal station by the hundred and necessitating the hauling of extra baggage cars. The train baggageman of one branch road tells us of having had 37 bicycles in his car one morning; he was obliged to leave 16 pieces of baggage.

Naturally, from the standpoint of the man who is administering a property for the benefit of its owners, and who is trying to do his duty towards them, there is a limit to the amount of the earnings of that property that he can throw away to please his friends or patrons. Many railroad officers have decided that bicycles cannot be carried free, in justice to the owners of the railroads, or to patrons who do not travel with bicycles, and the custom is gradually growing of

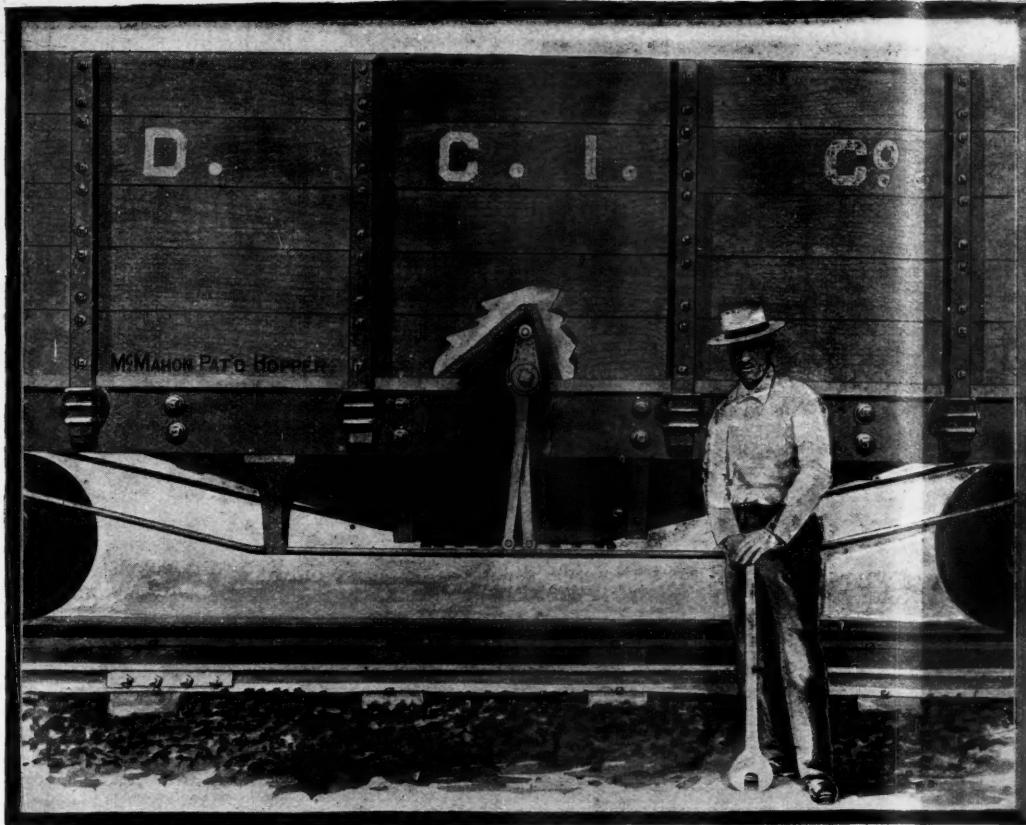


Fig. 1.—View of Car with Hopper Closed.

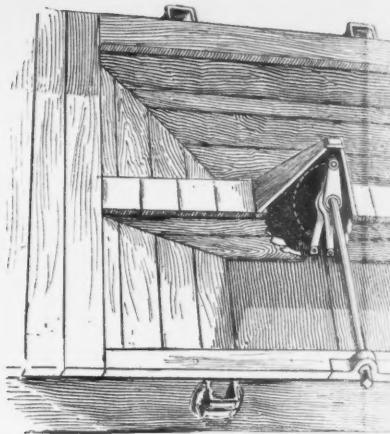


Fig. 6.—Looking Down into Hopper.

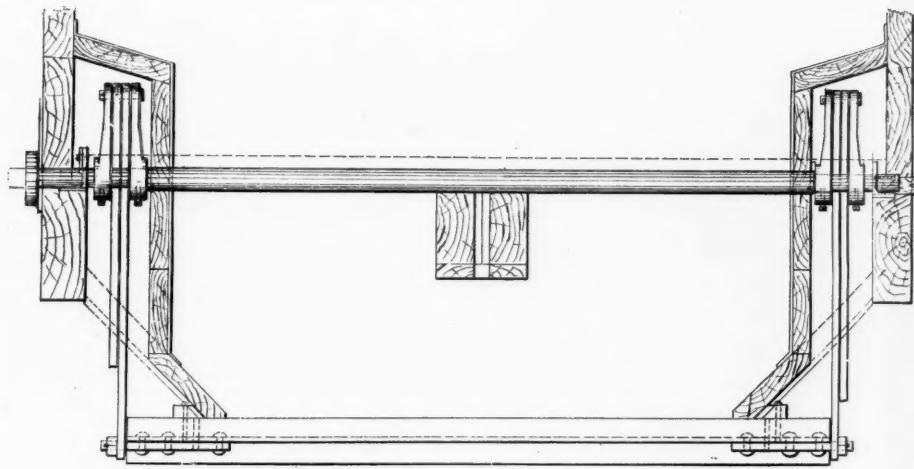


Fig. 2.—View of Car with Hopper Open.

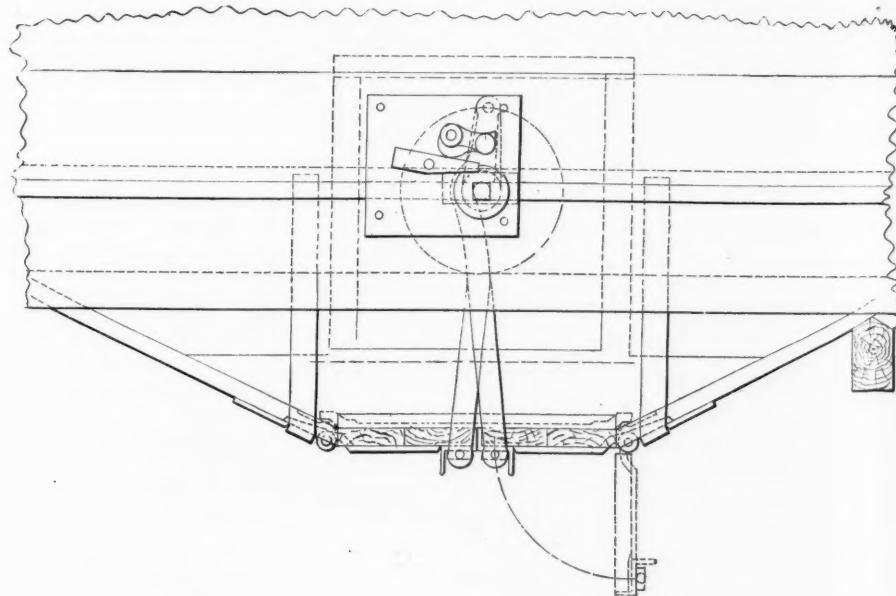


Fig. 4.—Arrangement with Operating Mechanism at Side of Car.

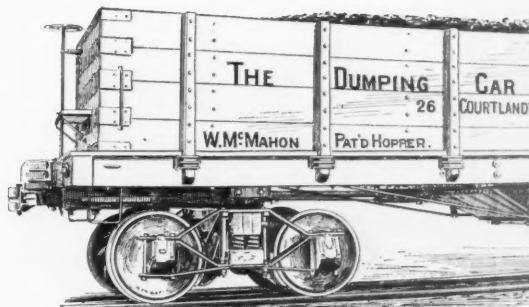


Fig. 7.—Side View of Car Fitted with Hopper.

THE McMAHON DUMP CAR.—MADE BY THE DUMPING

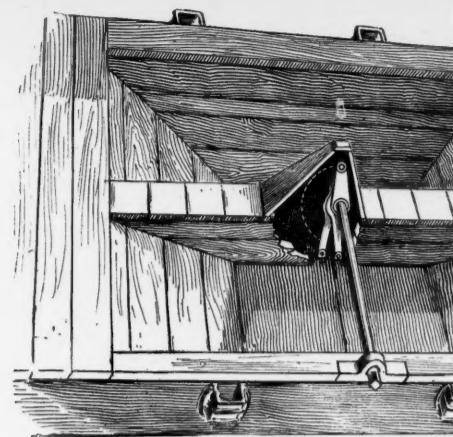


Fig. 6.—Looking Down into Hopper—McMahon Pat'd Hopper.

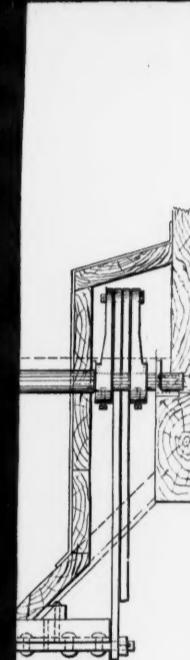


Fig. 2.—View of Car with Hopper

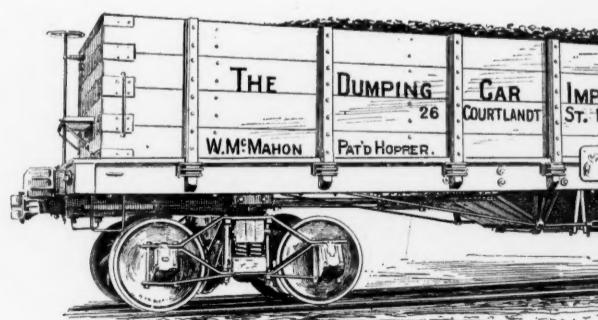
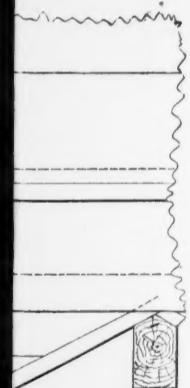


Fig. 7.—Side View of Car Fitted with Hopper.

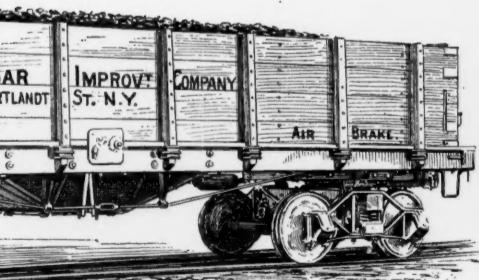
THE McMAHON DUMP CAR.—MADE BY THE DUMPING CAR IN



Hopper—Mechanism at Center.



with Hopper Wide Open.



Car Fitted with the Device.

PING CAR IMPROVEMENT CO., OF NEW YORK.

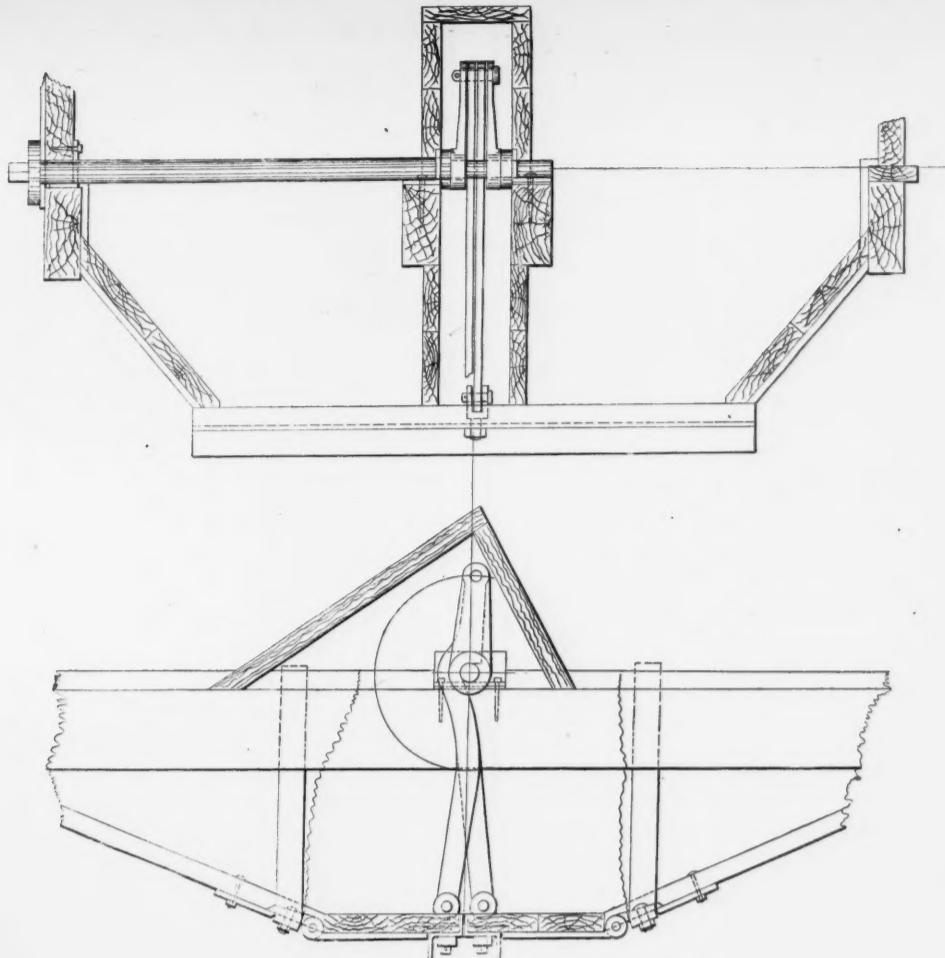


Fig. 5.—Arrangement of Device with Mechanism at Center of Car.

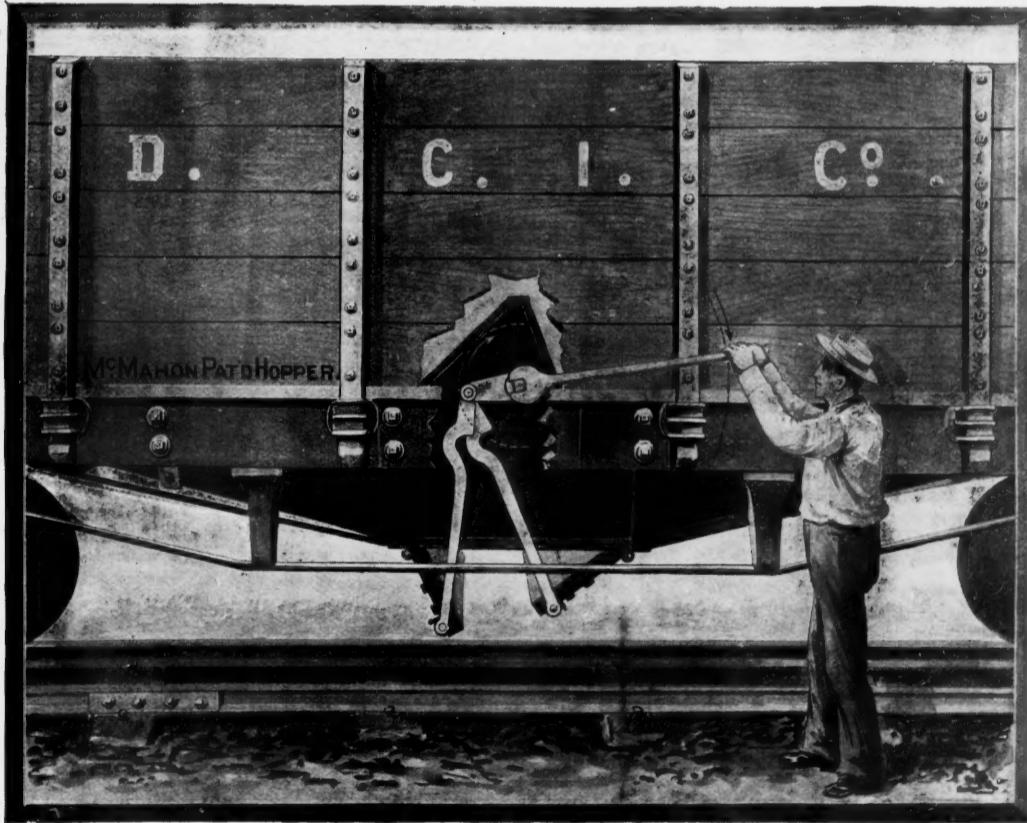
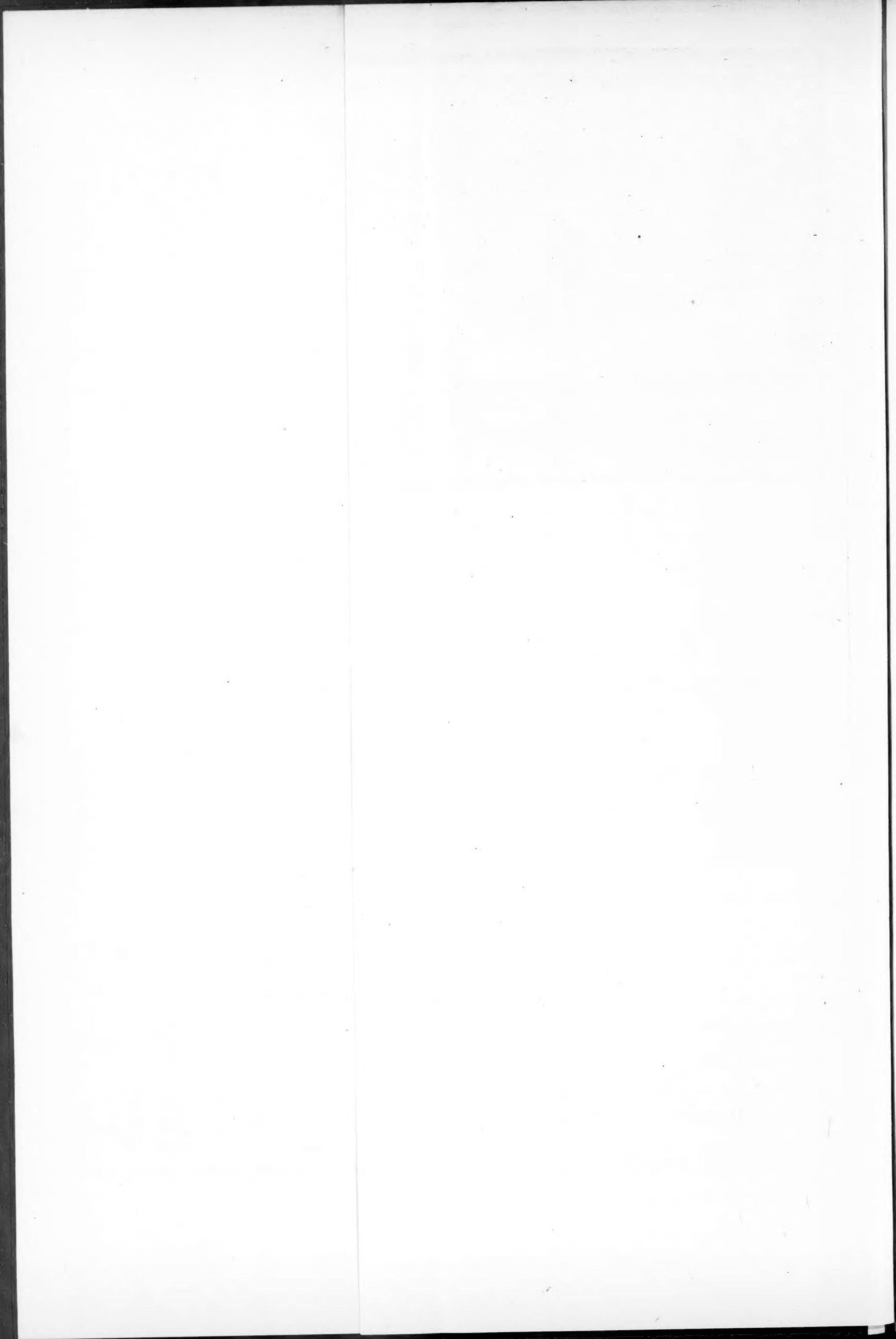


Fig. 3.—View of Car with Hopper Partly Closed.



making a small charge. The custom has always existed of making owners handle their wheels to and from the car and assume responsibility for them.

Now another phase of the matter opens up. The riders of bicycles protest that their wheels should be carried free; that they should be checked and handled like other baggage, and that the railroad company should be responsible for them. Some of these provisions, or all of them, have been put into bills and introduced into various state legislatures. The wheelmen are demanding as a "right" that their bicycles should be carried free.

Let us consider a little this point of rights. What right has a bicycle to free carriage by rail? Riding on horseback is a noble pastime. Its moral, mental and physical effects are almost as valuable as those of bicycle riding. Why should not a man have a saddle horse carried free as a matter of right? Or why not his dog? In England very complete arrangements exist for carrying horses and dogs on passenger trains; but one must pay for this accommodation, and we have never heard anyone claim the right to have horses or dogs carried free as part of his personal baggage. Many a thrifty resident in the suburbs likes to market in town, and why should not his market hamper be checked back and forth as personal baggage? Surely there is as much justice in this as in checking a bicycle. It is a much less troublesome package to take care of. A more accurate analogy would be between a bicycle and a carriage. One might ask to have his carriage checked as personal baggage with quite as good legal ground, for the courts have time and again decided that the bicycle is a vehicle, with all the rights and obligations on the road of a vehicle.

In fact there are no "rights" in the matter. It is a mere question of policy on the part of the railroad companies. Any law that attempts to compel them to carry bicycles free would, without doubt, be unconstitutional. Perhaps the railroad companies would not contest such a law, but none the less would it be unconstitutional. If they did not choose to contest it that would be another matter of policy.

Would it be good policy for the railroad companies to handle bicycles free and on the same terms as personal baggage? Would their net earnings be increased? That is the only question to consider, and that must be decided by each railroad company for itself. No doubt railroad travel is often promoted, and promoted to a somewhat important extent by bicycle riding. A great many riders go or come one way by rail or take a railroad journey to get to their starting point. Like many other pleasant amusements which have grown up, and which in the last few years have come to be important, bicycling promotes a movement of people around the great towns, from which the railroads profit. Apparently it is good policy to encourage such a pastime. It is certain moreover, that the business of the express companies has been greatly increased by the bicycle industry. Much the greater part of the finished product of the bicycle shops goes by express, and there is a constant sending back and forth of single wheels and of parts for repair. An important freight business has been created also in carrying the material for manufacture and lumber for crates. An estimate that seemed to have been made with considerable care, was published a few weeks ago to the effect that at the factory price the bicycles turned out in 1895 amounted to from 35 to 40 million dollars. Of this large business the railroad companies have naturally got their share. On the whole, therefore, the railroad companies have considerable object in encouraging the bicycle business.

Moreover, it is always policy to please the residents along a line of railroad, and every railroad manager regrets to be obliged to displease his public. People can be sure, as a rule, that any unpopular step taken by the modern railroad manager has been very carefully considered and that there are good reasons for it. As a rule, we should say that it would be good policy to be liberal in the matter of carrying bicycles and to please the public by generous concessions; but it is easy to see that free carriage may lead to great and costly abuse, and that each railroad company must consider this matter with careful regard to its own situation.

Annual Reports.

Chicago & Alton.—The Chicago & Alton report contains, in addition to the statistics of the year's operation, a few pages of very incisive comment by President Blackstone upon the policy of the state and general government in their dealings with the railroads during recent years. As to the portion of the report concerned with actual figures for the year it shows a sound and healthy financial condition. It could hardly be otherwise with this property, which is famous among our railroads for the strength of its position,

with a capitalization below the actual cost of its plant, a mileage unchanged for the last 17 years and a dividend rate of 8 per cent. maintained through the worst periods of financial distress.

The total length of the system is 843.35 miles. Its stock, common and preferred, amounts to only \$22,280,600. The statement for the year is briefly:

	1895.	1894.
Earnings from passenger traffic	\$2,134,155	\$2,043,912
" freight traffic	4,289,909	3,881,515
" express, mail, etc.	378,422	366,779
Total gross earnings	\$6,502,486	\$6,292,236
Operating expenses	3,982,993	3,628,687
Net earnings	\$2,519,493	\$2,663,549

This table shows an increase of \$510,250 in gross and \$155,944 or 5.8 per cent. in net earnings. The operating expenses have increased from 57.7 per cent. of gross earnings to 58.6 per cent. during the past year; the increase being due to large sums spent for maintenance of way and new equipment in the freight department. The tonnage has increased 17 per cent., the road having shipped 3,244,279 tons of freight during the year. The rate per ton has fallen from .917 of a cent in 1894, to .867 in 1895. The detailed tables annexed to the report, are as usual, excellent examples of lucid accounting, comprehensible to the ordinary layman.

But the most striking portion of the document is the comment on the action of the state governments in regard to the railroads within their jurisdictions. With its own fortunate record the Alton does not complain chiefly for itself, but the argument of Mr. Blackstone is directed against the whole policy of control. In fact, the consistent attitude of the Alton against any extension or development of its system has been adopted as the only defense against the sort of regulation to which railroads are subjected.

The two main charges against the government policy are, that it has so often assumed to regulate rates regardless of the ruinous results to the roads, and that it has allowed the building of unnecessary new roads beyond all measure. The result of all this sort of legislation is that so many roads have been built that they have in the majority of cases forced each other into bankruptcy, and after a process of reorganization are started in again, only to find that rates which can be charged do not pay the cost of service except in the most favorable times. Of course, the lesson of this is clear enough: the policy of the legislators must change, they must recognize the rights of the railroads to reasonable compensation, and must put an end to the "standing invitation" to build more and more unnecessary miles of track. "Unless popular sentiment in this country," says Mr. Blackstone, "shall so change as to practically recognize the principle—as it is recognized in other countries—that railroads controlled by the state in the interest of the people involves the duty of the state to protect the just rights of those at whose expense the railroads are constructed and operated, we see no reason why we may not expect the railroad history of the last quarter of a century to repeat itself."

Mr. Blackstone attaches to his report a table of railroad mileage, absolute, and relatively to population, in various countries and in the different states of the Union. A more complete (and we believe slightly more accurate) table of the world's railroads was printed in the *Railroad Gazette* of Aug. 2, 1895; and the mileage by states may be found in the reports of the Interstate Commerce Commission; therefore we do not reprint Mr. Blackstone's table.

The Northern Central.—The annual report of the Northern Central Railway for the year ending Dec. 31, 1895, is received. The main results are as below:

	1895.	Increase per cent.
Gross earnings	\$6,506,028	7.87
Working expenses	4,588,519	8.61
Net earnings	\$1,907,509	6.20

The available earnings amounted to \$1,908,904. After deducting interest and taxes, the balance to the credit of income account was \$678,124. Out of this, cash dividends at the rate of 7 per cent. were paid to the amount of \$526,267. The balance credited to profit and loss now stands at \$1,744,385.

The increase in working expenses was mainly in maintenance of way and in conducting transportation. The enlarged interlocking plant at the Baltimore & Potomac junction was completed and put into operation during the year; also an interlocking apparatus covering the grade crossings of the Belt Railroad over the Bolton tracks. Large expenditures were made in renewal of bridges and trestles. At Pine Valley a wooden trestle 1,163 ft. long was replaced by an embankment, two iron girder bridges and a stone arch. 6,632 tons of new steel and 247,570 ties were used in the year; 86 gondolas were added to the freight equipment, and 125 cars were replaced.

The passenger miles amounted to 51,951,285, an increase of 0.5 per cent. The rate per passenger mile was 2.182 cents, being a trifle over that of the former year. The ton-miles were 875,681,749, having increased 17.33 per cent. The rate per ton per mile was 0.561 cent, the decrease having been 0.041 cent. The gross earnings of the main stem amounted to \$29,368 per mile. This is a road which carries a heavy tonnage of coarse freight, such as coal, grain, lumber, iron ore and petroleum, and naturally this must take low rates.

January Accidents.

Our record of train accidents in January, given in this number includes 50 collisions, 78 derailments and 5 other

accidents, a total of 133 accidents, in which 47 persons were killed and 119 injured. The detailed list, printed on another page, contains accounts only of the more important of these accidents. All which caused no deaths or injuries to persons are omitted, except where the circumstances of the accident, as reported, make it of special interest.

These accidents are classified as follows:

	Cross- ing and other.	Total.
COLLISIONS:		
Trains breaking in two	6	6
Misplaced switch	4	6
Failure to give or observe signal	5	6
Mistake in giving or understand- ing orders	0	3
Miscellaneous	4	12
Unexplained	4	17
Total	23	50

DERAILMENTS.

Broken rail	2	Careless running	1
Defective bridge	1	Track repairers	2
Defective switch	1	Bad switching	1
Defective frog	3	Open draw	4
Broken wheel	7	Animals on track	4
Broken axle	6	Landslide	3
Broken truck	1	Washout	1
Fallen brakebeam	2	Snow on track	1
Loose wheel	1	Cave in	1
Broken drawbar	1	Unexplained	33
Boiler explosion	1		78
Misplaced switch	4		1
Derailing switch			

OTHER ACCIDENTS.

Boiler explosion	4
Broken crankpin	1
Total	5

Total number of accidents..... 133

A general classification shows:

	Collisions.	Derail- ments.	Other accid's.	Total.	P. c.
Defects of road	0	7	0	7	5
Defects of equipment	6	19	5	30	22
Negligence in operating	27	9	0	36	27
Unforeseen obstructions	0	10	0	10	8
Unexplained	17	33	0	50	38
Total	50	78	5	133	100

The number of trains involved is as follows:

	Collisions.	Derail- ments.	Other accid's.	Total.
Passenger	23	22	0	45
Freight and other	63	58	5	126
Total	86	80	5	171

The casualties may be divided as follows:

	Collisions.	Derail- ments.	Other accid's.	Total.
Killed	14	20	6	40
Employees	0	1	0	1
Passengers	4	2	0	6
Others	—	—	—	—
Total	18	23	6	47

The casualties to passengers and employees, when divided according to classes of causes, appear as follows:

	Pass.	Injured.	Killed.	Emp.
Collisions	2	3	1	1
Derailments	7	8	4	4
Other accidents	6	12	12	12
Total	19	23	17	21

Twenty-nine accidents caused the death of one or more persons each, and 28 caused injury but not death, leaving 76 (57 per cent. of the whole) which caused no personal injury deemed worthy of record.

The comparison with January of the previous five years shows:

	1896.	1895.	1894.	1893.	1892.	1891.
Collisions	50	55	41	104	120	106
Derailments	78	67	69	157	117	93
Other accidents	5	7	6	12	12	12
Total accidents	133	129	116	273	249	211
Employees killed	40	23	16	38	46	38
Others killed	7	9	28	11	15	8

placed upon watches the simple and obvious safeguard is to make no train movement except after consulting two timepieces; but nothing is said in the reports about the engineer's watch in this case. Presumably his was not slow; but the engineman himself, like hundreds of others before him, evidently was exceedingly slow.

Collisions due to trains parting on descending grades are classed in our record under the head of defects of equipment. Sometimes these accidents are so clearly the result of insufficient vigilance that the editor's conscience reproves him for not classing them under the head of negligence; but the one which occurred near Bristol, Conn., on the 12th, certainly was not of this kind, at least not the whole of it. If we ever get to the limit of weight of cars and length of trains it is to be hoped that then we shall see that the strength of couplings is brought up to the standard necessary to correspond with the demands on them.

Locomotive boiler explosions have been rather numerous lately, two very bad ones appearing in the present record. In addition to these we have to note an explosion at Hoboken, N. J., on Jan. 4, of an engine standing in the roundhouse of the Delaware, Lackawanna & Western, which wrecked not only the engine, but the building, and injured two men.

We have noted 16 street railroad accidents in the month of January, in which five persons were killed and 26 injured. Thirteen of these were not very bad, some of them doing no injury to persons, but the bridge disaster at Bedford, O., on the 9th, caused the death of three. This was reported in the *Railroad Gazette* of Jan. 24. At Ellwood, Ind., on the 5th, an electric car ran into a passenger train, killing one person and injuring five; at Knoxville, Tenn., on the 24th, a similar collision resulted in the death of one and the injury of six persons.

Mayor Pingree's potato patch has disturbed the transportation problem of the nation. One will hardly credit such a statement, for the adoption by the citizens of Detroit of a plan which enables them to support themselves by tilling the soil, ought to be, we should think, the most rational scheme imaginable for increasing the wealth of the nation and, consequently, the prosperity of the railroads, the shippers and everyone else. But, if a Chicago reporter can be believed, the Interstate Commerce Commission at its sitting in that city last week listened to a farmer of Pontiac, Mr. Freeman, who complained that the railroads were discriminating against him and his town, and who vowed that he would break up the Detroit Mayor's potato-raising monopoly. Particulars are not given, but the trouble is, we suppose, the fall in the price of potatoes at Detroit. As fast as it falls, the railroads ought to reduce the carrying charges from Pontiac, of course. Mr. Freeman is evidently a free trader. He not only wants to compete with other producers but with the consumers also. It strikes us that this is what Artemus Ward would have called "2 mutch." If we may judge by the liberal policy that many railroads have pursued in the past, it is safe to assume that the road from Pontiac to Detroit is willing to carry Mr. Freeman's potatoes to Detroit free and to return the empty barrels for nothing; but we do not see how he can compete with Mayor Pingree unless he goes down himself to retail his produce from door to door; and as for recommending the road to give him a pass, we just won't do it. The favor of carrying freight for nothing and passing the owners to boot, must be reserved, as of old, for live stock drovers, in time of (rate) war.

The passenger trainmen of the Lehigh Valley now wear on their caps aluminum badges, which, by a number, indicate the rank (as regards length of service) of the wearer. It seems to us that this means of individualizing the men is not so good as that of the sleeping car companies. On the Wagner cars the conductors and porters have conspicuous diagonal bands on the coat sleeve, each band indicating, we believe, five years' service. On the Lehigh Valley the number, especially if it be above 25 or thereabouts, looks too much like the numbers worn by horse car conductors and waiters in restaurants; that is, like a distinguishing mark for individuals whose names it is not worth while to take the trouble to try to remember. The L. V. conductor wearing No. 1 is at once distinguished, of course, as the oldest conductor on the road, and in the majority of cases the observer may be able to guess that he has served from 15 to 40 years, but one would naturally lump all the higher numbers in one class. Every time a man dies or resigns each individual below him must hand his badge over to some one else and take a new number. The conductors' badges are gold plated.

Mr. Ritchie, President of the British Board of Trade, has stated in Parliament that, in company with Sir Courtenay Boyle and Lord Dudley, he has recently visited France and Belgium to inspect the light railroads there; and he came back "more convinced than ever of the great importance of such railroads to the agricultural districts," and more determined to procure legislation on the subject. In Belgium the light roads are carried on by private enterprise, local enterprise and state assistance, jointly, and it seems to be understood that any action taken by the English Parliament will include more or less state assistance for roads of this kind.

TRADE CATALOGUES.

Paint.—The National Paint Works, Williamsport, Pa., issues a little pamphlet under the title of "Facts, Experience and Results in Wood and Metal Decoration and Preservation." It contains considerable record of experience with the use of the paints of the National Paint Works, and is worth examination by those interested in the subject.

Train Accidents in the United States in January.

COLLISIONS. REAR.

2d, on Pennsylvania road, at Old Bridge, N. J., a freight train ran into the rear of a preceding freight, wrecking several cars. The engineman was injured.

3d, 4 a. m., on Erie road, at Meadville, Pa., a passenger train ran over a misplaced switch and collided with a switching engine. Twelve passengers and 4 employees were injured. It is said that most of the passengers injured were lying in their berths with their heads toward the engine, and sustained bruises about the head and shoulders. The train was running at high speed, but was vestibuled.

5th, on Baltimore & Ohio, at Evitt's Creek, Md., a freight train ran into the rear of a preceding freight, wrecking 10 cars, several of which fell down a bank into the Potomac River. Two trainmen were injured.

9th, on Florida Central & Peninsular, at North, S. C., a passenger train ran into a car of timber which had run away and was standing on a trestle, and the engine, mail car and baggage car fell into the Edisto River. The engineman and mail agent were injured.

12th, 3 a. m., on New York & New England, near Bristol, Conn., an eastbound freight train broke apart in two places and the three sections continued running for a mile or two when the third ran into the second, derailing 4 cars; some of the forward cars kept running, however, and after going some distance a part of them were derailed by a piece of timber falling on the track; some of the foremost cars still kept on and ran into the forward section of the train, derailing three more.

14th, on Allegheny Valley, at Mahoning, Pa., a freight train ran into the rear of a preceding freight standing on a high bridge, damaging the caboose, which took fire from the headlight. The fire spread to the bridge (wooden) and the bridge, engine and 4 cars of oil fell into the stream and were burned up. A car of oil exploded and some spectators were injured, two seriously. It is said that the standing train had sent out a flagman, but that he did not go far enough. It took four days to clear away the wreck in the river and build a temporary bridge.

16th, on Philadelphia & Reading, at Bridgeport, Pa., a freight train which had been stopped by a signal was run into at the rear by a following freight, and the caboose and several cars were wrecked. It is said that a flagman went back from the foremost train, but was unable to attract the attention of the engineman.

20th, on Southern Railway, near Winston, N. C., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, damaging several cars. Three trainmen were injured.

21st, on New York, Chicago & St. Louis, at Valparaiso, Ind., a freight train standing at the station was run into at the rear by a following freight, wrecking 12 cars. A fireman was badly injured.

21st, on International & Great Northern, at Hutto, Tex., a passenger train just starting from the station was run into at the rear by a following stock train, and the rear car, a sleeper, was wrecked. The engineman and two tramps were killed. There was a dense fog at the time.

22d, on Cleveland, Cincinnati, Chicago & St. Louis, near Weisburg, Ind., a freight train descending a grade broke in two and the rear portion afterward ran into the forward one, wrecking several cars. One brakeman was killed and another injured.

30th, on Seaboard Air Line, at Manly, N. C., a freight train ran over a misplaced switch and into some freight cars standing on a side track, and the engine and 16 cars were wrecked. The fireman and one brakeman were killed and the engineman injured.

30th, on Baltimore & Ohio Southwestern, near Lexington, Ind., the rear portion of a freight train which had broken off and had been stopped, was run into at the rear by a following freight, wrecking the engine, caboose and 5 cars. There was a dense fog at the time.

And 10 others on 9 roads, involving 4 passenger and 13 freight and other trains.

BUTTING.

4th, on Baltimore & Ohio Southwestern, at Schooleys, O., an eastbound passenger train ran over a misplaced switch and into the head of a freight train standing on a side track, wrecking both engines, one mail car and several freight cars. Both men on the passenger engine and 3 employees on the freight engine were killed, and 3 postal clerks were injured. The passenger train was running at good speed, but no one in the passenger cars was injured, although the windows were all badly broken. The immunity of the passengers is attributed to the fact that the cars were vestibuled. The switch had been left open by the conductor of a preceding train, who expected the standing train would follow him out.

5th, 8 p. m., on Baltimore & Ohio Southwestern, at Roxobell, O., butting collision between a passenger train and a freight, wrecking both engines. The baggage master was killed and 6 other trainmen were injured, one of them fatally. It is said that the freight trainmen, having an order to meet another train, forgot about No. 13, the one with which they collided.

6th, on Missouri, Kansas & Texas, near Warre, Tex., butting collision of freight trains, wrecking both engines and 18 cars, 4 of which contained cattle. A tramp was killed and another one fatally injured. It is said that the collision was due to a mistake by the dispatcher.

22d, on Missouri, Kansas & Texas, near Booneville, Mo., butting collision between a southbound passenger train and a northbound freight; one fireman killed and one engineman injured. The freight conductor's watch was slow.

24th, on St. Louis, Iron Mountain & Southern, near Fair Oaks, Ark., butting collision between a passenger train and a freight, wrecking both engines. Four passengers were injured.

29th, on Buffalo, Rochester & Pittsburgh, at Whistle-town, Pa., butting collision between a northbound passenger train and a southbound freight, wrecking both engines and several cars. The conductor of the freight train was injured.

And 2 others involving 1 passenger train and 3 freights.

CROSSING AND MISCELLANEOUS.

2d, on Lehigh Valley, at Sayre, Pa., collision between a freight train and an empty engine, injuring two officers of the road who were riding on the engine.

7th, on St. Louis, Iron Mountain & Southern, near

Mineral Point, Mo., collision of freight trains at a meeting point, one of the trains not being clear of the main track. Several cars were wrecked and one fireman injured.

13th, on Southern Pacific, near El Paso, Tex., a freight train drawn by two engines ran into a work train standing on the main track, badly damaging 3 locomotives. The engineman jumped off and 1 of them was injured.

15th, on Pennsylvania road, at Black Creek, Pa., a freight train ascending a grade broke in two, and the men on the forward portion ran on, not knowing that they had lost the rear cars. On reaching a tank the engine was detached, and the cars, which the brakeman supposed were being held by a pushing engine at the rear, ran back down grade at high speed. The conductor heard them coming and succeeded in getting the rear portion of the train clear of the main track, but 11 cars were derailed and wrecked, and the wreck smashed 2 of the cars of the rear portion of the train which had been placed on a side track.

17th, on Midland Terminal, near Victor, Col., a passenger train moving backward collided with an empty freight car which had escaped from a station some distance up the grade. The passenger car was partially wrecked and 15 passengers were injured.

19th, on New York, New Haven & Hartford, at Van Nest, N. Y., a passenger train collided with a freight car standing on a side track, which did not clear the main line, and the fireman was killed. The engineman and two passengers were injured.

22d, 4 p. m., on Brooklyn Elevated, at Water street, Brooklyn, N. Y., a passenger train ran into an empty platform car, derailing one passenger car. One passenger was injured.

25th, on Southern Pacific, near Santa Clara, Cal., collision of passenger trains at the crossing of the standard gage and narrow gage lines, derailing one engine and several cars. Six employees were injured.

31st, on Wabash road, at Oakley, Ill., a passenger train ran into a freight train, which was backing into a side track, wrecking the engine, mail car and 12 freight cars. The engineman was killed.

And 10 others on 9 roads, involving 4 passenger and 13 freight and other trains.

DERAILMENTS. DEFECTS OF ROAD.

4th, on International & Great Northern, near Georgetown, Tex., a passenger car of a mixed train was derailed by a broken rail and was overturned. A brakeman, who jumped off at the side, and a passenger, who jumped off at the rear end, were killed. Two other passengers were injured.

9th, on Chicago, Milwaukee & St. Paul, at Franklin, Ill., several cars in a freight train were derailed by a broken frog, and a part of the wreck fell upon the adjoining main track. A westbound train approaching a moment later ran into the wreck at high speed and the engine was ditched. The passenger fireman was killed.

12th, on Louisville, Evansville & St. Louis, at Goldthwaite, Ind., a passenger train running at high speed was derailed at a frog and the engine and 5 cars were ditched. The fireman jumped off and was fatally injured.

24th, on New York Central & Hudson River, at Melrose, N. Y., a freight train was derailed at a defective frog and all four main tracks were blocked. A brakeman was thrown from the top of a car and seriously injured.

And 3 others on 3 roads, involving 1 passenger train and 2 freights.

DEFECTS OF EQUIPMENT.

9th, on Chicago, Rock Island & Pacific, near Herington, Kan., a freight train was derailed by a broken axle and the engineman was injured.

21st, 8 p. m., on Baltimore & Ohio, near Foley, Pa., a freight train was derailed near a bridge by the draft rigging of a car which broke loose and fell upon the track; one of the derailed cars ran against the end post of a bridge and 3 cars, with the bridge, fell to the ravine below.

22d, on Pittsburgh, Cincinnati, Chicago & St. Louis, near South Charleston, O., the locomotive of a passenger train running at high speed was wrecked by the explosion of its boiler and the whole train of 9 cars was derailed and ditched, making a bad wreck. The engineman and fireman were killed and 7 passengers were injured. The smallness of the last mentioned number is attributed to the fact that the cars had Pullman vestibules.

31st, 11 p. m., on Cleveland, Cincinnati, Chicago & St. Louis, near Lawrenceburg, Ind., a freight train was derailed by a broken wheel just before reaching a bridge, and 30 cars, with the bridge, fell to the river 30 ft. below. Two tramps were killed and 3 injured.

And 15 others on 13 roads, involving 2 passenger and 13 freight and other trains.

NEGLIGENCE IN OPERATING.

3d, on Louisville, Evansville & St. Louis, at Ayrshire, Ind., a freight train was derailed at a misplaced switch and the engine was overturned. The engineman was fatally injured.

7th, 3:45 a. m., on Louisville & Nashville, at Rigolets, La., a freight train ran into an open draw and the engine and 22 cars fell into the water, which was about 30 ft. deep. The wreck knocked down two fixed spans of the bridge. The train was moving slowly, and the engineman, who jumped into the water, saved himself by climbing upon a car body detached from the trucks, which floated him off half a mile. All of the cars were loaded. An extra fireman was drowned, and it is believed that several tramps were also drowned. One brakeman, the regular fireman and 3 tramps were injured.

10th, on Illinois Central, near Springfield, Ill., a passenger train was derailed at a misplaced switch and the engine and baggage car were overturned and wrecked. The engineman and fireman were injured.

17th, on Philadelphia, Wilmington & Baltimore, at Perryville, Md., a southbound freight train was derailed at a derailing switch near the east end of the Susquehanna River, and the engine was overturned. A brakeman was injured.

28th, 1 a. m., on Northern Pacific Coast road, at Sanalito, Cal., an engine attempting to run upon a ferry-boat broke through the apron and fell into the water. The engineman was killed and the fireman injured.

And 4 others on 4 roads, involving 2 passenger and 2 freight trains.

UNFORESEEN OBSTRUCTIONS.

1st, 8 p. m., on Illinois Central, near Holly Springs, Miss., a passenger train was derailed by running over a mule, making a bad wreck. The fireman was badly injured.

4th, on Union Pacific, Denver & Gulf, at Chug Water, Wyo., a passenger train was derailed by running over some cattle, and the engine fell down a bank. The fireman was killed and the engineman injured.

10th, on Yazoo & Mississippi Valley, near Greenville,

Miss., a mixed train was derailed by running over a mule and the engineman was scalded to death.

11th, on Louisville & Nashville, near Middlesborough, Ky., a freight train was derailed by a landslide, and the engineman was killed. The fireman was injured.

20th, on Lehigh Valley, near Hazleton, Pa., a passenger train was derailed by the sinking of the roadbed, due to excavations in a coal mine beneath the track, and the engine was overturned. The engineman was killed and the fireman was injured. A brakeman was thrown out of a car window.

24th, 10 p. m., on Norfolk & Western, near Riverton, Va., a passenger train was derailed by a rock which had fallen upon the track and the engine and first 3 cars took fire and were burned up. A porter was killed and the engineman and fireman were injured.

26th, on Southern Pacific, near South San Francisco, Cal., the engine and baggage car of a passenger train was derailed by a washout and fell into a stream of water 8 ft. deep. The engineman was killed and 2 trainmen and 2 passengers were injured.

30th, 8 p. m., on Houston & Texas Central, near Hempstead, Tex., a freight train was derailed by running over a cow and 5 loaded cars were wrecked. The engineman was killed and the fireman fatally injured. Two other trainmen were hurt.

And 2 others involving 2 passenger trains.

UNEXPLAINED.

1st, on Denver & Rio Grande, at Malta, Col., a special newspaper train running at high speed was derailed on a curve and the baggage car was wrecked. The engine ran into and badly damaged the station building. The engineman and fireman were killed.

2d, on Pennsylvania road, at Twenty-eighth street, Pittsburgh, a switching freight train became uncontrollable and was backed into an engine house, badly damaging the building. A man at work in the boiler of a locomotive in the roundhouse was imprisoned for 6 hours.

6th, on Long Island road, near Hicksville, N. Y., a freight train was derailed and 3 cars were wrecked; one brakeman killed.

12th, on Boston & Maine, at Manchester, N. H., the express car in a passenger train was derailed and ran against the passenger station, making a bad wreck. The express messenger was injured.

13th, on Southern California, near Riverside, Cal., a mixed train was derailed and a passenger car overturned. The baggageman was injured.

16th, 1 a. m., on Pittsburgh, Cincinnati, Chicago & St. Louis, at Colliers, W. Va., a freight train was derailed and one of the cars fell in front of an express train, derailing its engine and first two cars. A freight brakeman trying to flag the express was killed, and one other employee was injured.

17th, on Southern Pacific, near Visalia, Cal., a long freight train drawn by two engines was derailed, and both engines and 14 cars were wrecked. Two trainmen were injured.

25th, 9 p. m., on Denver, Leadville & Gunnison, near Buena Vista, Col., the engine and 4 cars of a freight train were derailed and fell down a bank. The engineman and fireman were badly injured.

29th, on Philadelphia & Reading, at Mahanoy City, Pa., several cars of a freight train were derailed and a brakeman was fatally injured.

And 24 others on 17 roads, involving 4 passenger and 20 freight and other trains.

OTHER ACCIDENTS.

4th, 2 a. m., on Columbus, Sandusky & Hocking, near Fultonham, O., the engine of a freight train was wrecked by the explosion of its boiler and the engineman, fireman, conductor and one brakeman were killed.

9th, on Toledo & Ohio Central, near Rushville, O., the locomotive of a freight train was badly damaged by an explosion due to the rupture of the crownsheet; fireman and one brakeman injured.

16th, on Pennsylvania road, at Camden, N. J., the locomotive of a freight train was badly damaged by an explosion due to the rupture of the crownsheet, and the engineman was fatally scalded.

17th, 2 a. m., on Delaware, Lackawanna & Western, at Halstead, Pa., the locomotive of a freight train was badly damaged by the explosion of its boiler and the fireman was fatally injured. It is said that the water in the boiler had been allowed to become too low.

22d, on Richmond, Fredericksburg & Potomac, near Fredericksburg, Va., the engine of a freight train was damaged by breaking of a crank pin, and the fireman was injured.

A summary will be found in another column.

TECHNICAL.

Manufacturing and Business.

The Railway Supply Co., St. Louis, Mo., is a new corporation just formed for the purpose of handling all kinds of railroad and contractors' material. The President, Mr. A. Butze, was formerly Purchasing Agent of the Missouri Pacific and for several years with Mr. E. H. Linley. For the past four years he has been in business for himself and has built up a large trade in railroad and contractors' supplies. The Vice-President, Mr. John S. Manchester, has been connected with the firm of M. M. Buck & Co., of St. Louis, for the past 24 years. He has just resigned from that firm to become associated with Mr. Butze in the formation of the above company. The Secretary, Mr. W. E. Butze, was formerly in the Chief Engineer's department of the Wabash. The store of the new company will be at No. 11 North Sixth street, St. Louis.

The United States Metallic Packing Co. has removed its general offices to its works located at 427 North Third street, Philadelphia.

Mr. Henry L. Leach, of North Cambridge, Mass., the manufacturer of the Leach sand blower for locomotives, sends us a statement of his orders for January. This shows that 113 sets were ordered that month, which Mr. Leach says, is the largest number of orders so far received by him, the best previous record being 101 sets in August last. The January orders included 47 sets ordered directly from locomotive works, and among orders received from railroads were 25 sets for the Norfolk & Western, 12 for the Delaware, Lackawanna & Western, three for the C. C. & St. Louis, and smaller orders from other prominent railroads.

Iron and Steel.

The Philadelphia Bridge Works and the Reading Rolling Mill Co., which corporations are controlled by the same officers, have gone out of the hands of receivers. F. H. Saylor is President of both corporations, and Geo. W. Corbett, Business Manager. Livingston Saylor is Superintendent of the bridge works, and W. H. Lutz of the rolling mills. The plant of the Philadelphia Bridge Works is located at Pottstown, and the rolling mill property is at Reading. The two companies have offices at 257 South Fourth street, Philadelphia.

The Illinois Steel Co. has orders for about 100,000 tons of rails. At this time last year the orders amounted to about 20,000 tons.

The Cumberland Valley has placed an order with the Pennsylvania Steel Company for 1,500 tons of rails.

The Lighthouse Board Feb. 20, awarded the contract for eight square and seven triangular beacons for Mobile Bay channel to the Allentown Rolling Mill Company.

The Crown Point Iron Company, which has offices at 21 Cortlandt street, New York City, and mines at Crown Point, Essex County, N. Y., has gone into the hands of temporary receivers.

It is stated that the Richlands (Va.) Iron Company will erect a rail mill at Alexandria, Ind.

The Toledo Drop Forge Company has been incorporated with a capital stock of \$30,000.

The stockholders of the Indiana Car & Foundry Company held their annual meeting at Indianapolis recently. Major Collins was re-elected President, Emil Pollock Secretary, and J. K. Pollock Treasurer.

The Toronto Junction Foundry Company has been incorporated with a capital stock of \$24,000.

New Stations and Shops.

The Southern Railway has bought land at Salisbury, N. C., for new machine shops to be built at that town. These shops will do the repair work for the Western North Carolina Division and the Northwestern North Carolina road, about 300 miles of road altogether. The shops will be of some extent, and will employ over 100 men at first.

Preliminary work for the new joint freight house for the Seaboard Air Line and the Western & Atlantic will be begun at Atlanta in a short time. The contract for grading is reported to have been let, and the plans have been drawn for a structure which will cover a lot 200 ft. x 900 ft.

Hamilton & Kull, who now operate the Erie Car Works in Pennsylvania, have recently added a blacksmith shop 52 ft. x 75 ft. to the large car repair building. The shops have been busy for some time past on repairs, recent work of this class including contracts for repairing cars for the Pittsburg, Shenango & Lake Erie, the New York, Chicago & St. Louis, and for 300 cars for the Lake Shore & Michigan Southern.

The Boston & Maine, it is stated, will erect large repair shops at Concord, N. H.

Interlocking.

The National Switch & Signal Company has been awarded the contract for installing six interlocking plants on the Lima Northern Railroad, in Ohio, at the following points: Lima, Malinta, Hamler, Ottawa, Leipsic and West Leipsic.

Car Coupler Litigation.

In another part of this paper we publish the text in full of the recent decisions in the cases of the Gould Coupler Company against various other companies. Those who are interested in the matter now have all the documents up to date before them, and it will be their own fault if they are not informed on the subject. Just as we go to press we learn that the appeal taken by Pratt & Letchworth has been withdrawn.

Steel Rail Production in 1895.

The production of all kinds of Bessemer steel rails by the producers of Bessemer steel ingots in 1895 was 1,266,081 tons, against a similar production of 904,020 tons in 1894, 1,036,353 tons in 1893 and 1,458,732 tons in 1892. The following table shows the production by states of Bessemer steel rails by the producers of Bessemer steel ingots in 1892, 1893, 1894 and 1895:

States—Rails.	1892, Gross tons.	1893, Gross tons.	1894, Gross tons.	1895, Gross tons.
Pennsylvania.....	885,652	639,431	606,866	837,043
Illinois.....	450,542	232,260	925,869	324,050
Other states.....	122,538	161,662	71,285	104,988
Total.....	1,458,732	1,036,353	904,020	1,266,081

The *Bulletin* of the Iron and Steel Association, from which the above is taken, estimates that when the returns of the production of Bessemer steel rails from purchased blooms in 1895 are received it is probable that the total production of Bessemer steel rails in that year will be found to have exceeded 1,350,000 gross tons.

A Bridge Wreck at Davenport.

The north half of the 300-ft. draw span of the bridge across the Mississippi River at Davenport, Ia., now being rebuilt, collapsed Feb. 25 and fell into the river. The accident was caused by the ice, which had gorged a mile east of the bridge and suddenly broke and rushed against the false work. The structure, in its semi-completed

condition, was unable to withstand the pressure and fell. A Chicago, Rock Island & Pacific train, consisting of two coaches and a locomotive was on the bridge at the time of the accident, and the engineer stopped his train just in time. Traffic between Rock Island and Davenport by rail or wagon is suspended, and it will be some time before trains can run across the bridge. The loss to the Phoenix Bridge Company will amount to about \$50,000, it is said.

New Electric Power Transmission Company.

Senator Malby introduced in the State Legislature at Albany on Feb. 19 a bill incorporating the St. Lawrence Power Co. This company proposes to construct a canal from the St. Lawrence River to the Grasse River to develop power by means of turbines and to transmit it electrically. The capital is \$200,000.

THE SCRAP HEAP.

Notes.

The ferry steamers Promise and Fortune last week went from Detroit to Port Dover, Ont., to rescue the car ferryboat Shenango No. 2 from the ice. They reached Detroit on Sunday with the disabled boat. The crew reported the ice in Lake Erie very heavy and the task of towing the car ferry through the ice was extremely slow and tedious, owing to her great width. The round trip from Detroit occupied five days, although the distance was only 70 miles. The Shenango was taken to the Detroit dry-dock.

The strike that has stopped work at the shops of the Mexican International Railroad in Diaz for three weeks, involving over three hundred men, was settled Feb. 22 through the intercession of the Eagle Pass Board of Trade, and a committee of citizens from Diaz. The men agreed to return to work at the old scale in consideration of the great loss of the company through the burning of the shops. The company agrees to take back all of the old men without discrimination.

The contract between the Buffalo Grade Crossing Commissioners and the Erie Railroad was signed on Feb. 20. Buffalo papers report that the Western New York & Pennsylvania is now ready to sign a contract, having reached an agreement with the Commissioners.

At Belleville, Ill., on Feb. 21, F. M. Pierce and W. Cat-trell were convicted of attempting to rob a passenger train on the Mobile & Ohio in March, 1894. Near Dover, N. J., last week, about 15 tramps in a freight car, not all of them paupers, were held up by three masked men armed with revolvers, who robbed the crowd of about \$200.

A severe snowstorm impeded railroad traffic in northern and western New York, Feb. 20. Freight traffic was almost completely suspended on the New York Central for some time, and the rotary snow plow was put in service to clear the tracks. The Buffalo, Rochester & Pittsburgh was blocked even longer than the Central.

Chancellor McGill, of New Jersey, has filed an opinion, fining the Pennsylvania Railroad \$10 for contempt of court in disobeying the order restraining the company from interfering with the National Dock Company in tunneling under the Pennsylvania tracks in Jersey City. The Chancellor held that an appeal from the injunction did not stay the injunction, as claimed by the Pennsylvania Railroad. He expressed a belief that the injunction would henceforth be observed. If not, the railroad company's property will be sequestered at the end of 30 days.

The North Carolina Railroad Commissioners have revised their circular concerning train bulletins; it now requires each road "to bulletin at every telegraph station along its line, and at other stations, if practicable, 10 minutes in advance of the schedule time of arrival of each passenger train, whether such train is on time, and, if behind its schedule time, to state as near as can be approximated the time of its arrival."

Mr. Tracey, of Missouri, has introduced in Congress a bill to create a Department of Commerce. It will include the Commissionership of Railroads, now in the Interior Department, and the Interstate Commerce Commission. Representative Loud, Chairman of the Post Office Committee, has introduced a bill to regulate the transmission of free matter through the mails. It aims to have heavy articles sent to or from Government departments removed from the mails and carried by freight. It is claimed that blank books by the hundred tons, office carpets, furniture, grindstones and camp equipages are sent through the mails, the Government paying the railroads about \$8 per 10 lbs. for transportation. In the New York Legislature bill has been introduced to compel railroads to support employees who have been injured in the service. An other bill reduces the fare on the New York & Brooklyn Bridge cars to one cent each way, morning and evening, and to two cents at other times. In the New Jersey Legislature the Erie Railroad is asking for the passage of a bill to confirm the recent reorganization of the company, and the advocates of a law compelling that road to abolish certain grade crossings in Jersey City announce that the company's desires will not be acceded to until it agrees to elevate the tracks. Another bill provides for changing the basis of taxation of certain railroad property. In the Utah Legislature, since the bill to establish a railroad commission has been criticised, several other bills have been introduced, among which is one to fix the maximum rates of freight and passengers. This

bill fills 100 typewritten pages and prescribes complete tariffs in detail.

Fall Brook Discipline.

Discipline without suspension, on the methods which many railroad men have learned by investigation of the practice of the Fall Brook Railway, has now been in force for long or short periods on 15 different roads, and the sixteenth, the Boston & Maine, will adopt the practice on March 1. First Vice-President T. A. McKinnon has issued the following circular:

"Commencing March 1 the enforcement of discipline by suspension will be discontinued. Heads of departments will keep a record of the service rendered by each person in their respective departments, and whenever the record of any is so generally unsatisfactory as to unfit him for further service, dismissal will follow.

"Each person employed will be notified promptly of unfavorable entries made in the record at any time, but will not be permitted to see the record of another person. Bulletins showing each case of discipline, omitting name, date, train and location, but containing facts and conclusions and such comments as are applicable, will be issued from time to time if considered necessary.

"Dishonesty, intemperance, disloyalty, insubordination, incivility, wilful negligence, incompetency or other disobedience of the company's rules will be considered sufficient cause for dismissal.

"In the promotion of employees the previous records will be carefully considered. Subordinate officers will see that information necessary to the proper keeping of the records of each individual is promptly forwarded to the head of his department."

The objects to be attained under the new system are: "First, to avoid loss of wages by persons employed and consequent suffering to those who are dependent upon their earnings. Second, to stimulate and encourage all persons engaged in company's service in the faithful and intelligent performance of their respective duties. This system is introduced with the belief that it will be directly beneficial and that it will meet with the approval and cordial co-operation of all concerned."

The Columbus, Sandusky & Hocking is one of the roads that has recently made this change. General Manager Thornburgh, of that road, has issued a circular somewhat like that of the Chicago, Peoria & St. Louis, which was published in the *Railroad Gazette* of Feb. 7.

Another Ferris Wheel.

The Phoenix Iron Works, of Phoenixville, Pa., has contracted to build for Percy G. Williams, of the Bergen Beach Company, a Ferris wheel, which will be 200 ft. high. About 100 tons of steel will be used in its construction. It will be lighted by 500 incandescent electric lights. There will be fourteen cars on the wheel, each with a seating capacity for sixteen people.

New Routes for Export Wheat.

Internal improvements of an important nature in rail and waterways are projected in the Province of Manitoba. First it is proposed to so improve the Red River that it will be navigable for large steamers to Lake Winnipeg, 50 miles away. A continuation of this project for the canalization of the waters running from the north end of Lake Winnipeg to Hudson Bay. About 75 miles of this latter distance will require improvement. It is also proposed to ask the United States Government to build such storage dams and improvements on that part of the Red River south of the international boundary as will make it navigable for grain barges. These plans would give water way, open six months to tide water, and thence less in distance to Liverpool than from Montreal. The distance from the Red River Valley to Hudson Bay is less than to Chicago, while from Hudson Bay to Liverpool is less than from New York or Montreal. The Red River Valley wheat districts have never had a crop failure and last year produced 100,000,000 bushels of wheat.

Another proposed improvement and to which the present Provincial government is committed is the construction of the works of the Lake Manitoba Railway and Canal Co. A bill guaranteeing interest for 30 years on \$8,000 a mile for a 100 to 125 miles of road to the Dauphin country has been introduced. The road is to be entirely a colonization scheme. A third project is the improvement of the Long Sault rapids in the Rainy River, for which \$16,000 has been named in the budget as a preliminary amount. This will give uninterrupted navigation from Rat Portage, on the Canadian Pacific, to Rainy Lake, on the Minnesota boundary, 350 miles away. There is a considerable steamboat traffic over this route and three boats were wrecked at the Long Sault last year.

Railroad English in India.

A lady living in India sends us the following examples of Baboo English as it is applied to railroad correspondence:

SIR, Now a days all Ticket collector become too indulgent. In time of No. 4 down passenger Mr. A— he coming on platform 10 minutes after his arrival, Mr. H— he coming after the 15 minutes, and Mr. M—he never coming in whole time.

Such conduct gives me the much botheration to conduct my works properly so your honour kindly take the notice for such conduct and make me thankful.

Yours obedient,
M. A. B.

SIR, I beg to bring to your kind notice that my signal lever is somewhat in bad order, and at time of giving green is likely to hurt somebody. Yesterday night at time of 27 up, my signalman he has been nearly knocked out of his jaw, whereby he experience the severe wound, please do the needful and oblige.

Station Master.

Providence Passenger Station Burnt Down.

The Union passenger station at Providence, R. I., built in 1848, and a well-known landmark, was destroyed by fire Feb. 21. Ever since the agitation for a new station began, there has been discussion as to what should be done with the old one, but the problem was solved Friday morning. The first alarm was given soon after midnight, and by 3 o'clock the whole building was in ruins. This station was designed by Thomas A. Tefft, then a student at Brown University. It was an example of the Romanesque order of architecture, and when it was constructed it was said to be the longest building in the United States, being 625 ft. in length. The central towers, the octagonal towers on either end, the arcades and colonnades, and the numerous arches, all suggested the churches in upper Italy built centuries ago by the Lombards. The upper part of the main structure was formerly devoted to a public hall, which, in 1860, was the principal hall in the city. In that year Abraham Lincoln made a speech in this hall. The towers will be taken down, the walls will be reduced in height and a new roof put on, thus rendering the station habitable

until the new one is completed. The building belonged to the city.

Buffet Cars for All of Us.

On all trains of the Chicago, Milwaukee & St. Paul not equipped with dining cars, sandwiches for 10 cents apiece are now sold by the news agents. They are furnished to the agents by the General News Agent, and are kept in ventilated tin boxes. The sandwiches are cut in the latest buffet-car style. Every sandwich is separately packed in wax paper, completely covered with tinfoil, and labeled (ham, tongue or corned beef).

The 20-ft. Lake Channel.

A recent summary in the *Marine Review*, of Cleveland, of the work in the 20-ft. channel between Duluth, Chicago and Buffalo shows that, in a general way, the channel will have an available depth at all points of 17 ft. for vessels in the Chicago and Buffalo or Lakes Michigan and Erie trade the coming season. The 20-ft. channel in the Sault Ste. Marie canal and the waters connecting Duluth and the lower lakes, will not be available until 1897, and by that time that depth will also be available for boats in the Chicago-Lake Erie trade. The *Review* states that not a single lower lake port has yet made ready for the deeper channel. There is one other point of interest, that not a single upper lake shipping port, except Two Harbors, near Duluth, has yet made any preparations for the use of the deep channel, so that when it is ready, even in part, it will be of but little immediate advantage. The 17-ft. depth that will be available from Lake Michigan the coming season will be of value between the iron ore ports of Escanaba and Ashtabula and hardly anywhere else. During part of last year there was an available draft of 16 ft. between these ports, so that little will be gained in tonnage for this year by the enormous expenditures already made in this project.

Lake Notes.

The third steel tow barge for the Minnesota Steamship Co., a subsidiary company of the Minnesota Iron Co., was launched last week at Chicago. The boat is 367 ft. over all, and will carry 4,000 gross tons.

Lake Superior coal docks, which received last year over 3,000,000 tons, will be nearly clear by spring, the improved railroad business of the West demanding far more bituminous coal than the preceding year.

The steamship for the Mutual Transportation Co. launched at Cleveland last week is the largest ship on the lakes, by 20 ft., being 432 ft. long, 48 ft. beam and 28 ft. deep. The ship's capacity is not greatly in excess of some ships launched last year, her beam and depth being the same. The boat will carry nearly 7,000 tons on 18 ft. of water.

Lake Superior Mining.

A mining shaft said to be the deepest and largest in the world was completed last week at Red Jacket, Mich., for the Calumet & Hecla copper mine. It is 4,900 ft. in vertical depth, 14½ ft. x 22 ft. in size and has 6 compartments, being timbered throughout with Southern pine, not far from 10,000,000 ft. being used. It will be operated by two pairs of 3,000-H. P. triple engines, each capable of hoisting 10 tons 3,600 ft. per minute. It has been in construction over six years.

Discoveries the past week in the Mesaba iron range have extended the length of the range 12 miles, making its known length about 50 miles. The Duluth, Missabe & Northern road, on this range, probably has in sight for future business more ore than any other line in this country. Its owners are, however, still buying ore lands and mines and have under option for purchase probably not less than 35,000,000 tons of ore.

In the grading of the Lake Superior & Ishpeming Road, from Marquette to Ishpeming Mines, a valuable find of desirable ore in probably very large quantity, has been made in a shallow cutting on the property of the Jackson Mine. The curious thing about this discovery is the fact that the Jackson is the oldest mine on Lake Superior, having been in operation as far back as 1845, and the new find is but a few rods from the main workings.

A year or two before the general discovery of iron on the Mesaba range in Northern Minnesota, a sub-company of the Duluth & Winnipeg road, the North Star Construction Co., bought for about \$750,000 large tracts of what were supposed to be iron-bearing lands in the district. The control of these lands, in common with the road, has passed into the hands of the Canadian Pacific, and now, after it had been supposed that they contained little of value, it has been found that some of the greatest deposits of the range lie in their vicinity. The company has made a number of leases, retaining tonnage hauling rights, and it is said that enough ore has been found under these leases to warrant the construction of a line from the nearest point on the Duluth & Winnipeg to the range, about 45 miles.

The Minnesota Iron Co. has found ore at points about 15 miles distant from the nearest point reached by the Duluth & Iron Range road and will build to the new mines.

New York State Engineer's Report.

The annual report of State Engineer Campbell W. Adams was presented to the Legislature Feb. 24. The attention of the Legislature is called to the fact that the nine-million-dollar canal bill, under which improvements on the state canals are now being made does not provide for repairs of many structures now in a dilapidated condition, nor is any of it available for work on the various feeders. These should be put in good condition to supply water for the canal after the improvements have been made. Twenty-five companies of engineers are now in the field, making the surveys preparatory to letting the contracts under the nine-million-dollar bill. Nine of these are on the eastern division, seven on the middle division, and nine on the western division, covering the total length of the Erie, Oswego, and Champlain Canals. The surveys will probably be completed in time to begin letting contracts for the work of improvement in June.

The report deals at considerable length with the subject of electricity on the canals, and after described the Lam's system, which was tested at Tonawanda last fall, compares the same with the Milligan device that was described in the preceding report, and shows that the problem is far from a commercially practical solution. A new device is described, which it is claimed is nearer the practical solution of this problem than any yet investigated.

LOCOMOTIVE BUILDING.

The San Francisco & San Joaquin Valley road is reported to be in the market for five new locomotives.

The Baldwin Locomotive Works are building an electric locomotive for the Crozier Iron Co. to be used in the iron mines in Virginia. It will be electrically equipped

by the Westinghouse Co. and is the first electric locomotive to be built upon order since the agreement between the two companies.

The order of the Lake Superior & Ishpeming road with the Pittsburgh Locomotive Works, noted last week, is for 11 locomotives. Of these, four will be two-cylindered compound, consolidated engines, total weight 148,000 lbs.; weight on drivers, 130,000 lbs; two will be simple consolidated engines, same weight as the compound, and five will be six-wheel switch engines, weight 107,000 lbs. on drivers.

The Schenectady Locomotive Works are building eight locomotives for the Adirondack & St. Lawrence line, and not ten, as reported last week. Four of these engines have been delivered, and the other four are about ready for delivery. Dr. Webb has also ordered three locomotives from the Brooks Locomotive Works for this road, which will be delivered in about six weeks. All these engines are very heavy, weighing from 138,000 lbs. to 170,000 lbs., and about half of them are specially designed for very fast passenger service.

CAR BUILDING.

The Calumet & Blue Island road is in the market for 300 freight cars.

The Wheeling & Lake Erie order for 1,000 freight cars is said to have gone to the Barney & Smith Car Co.

The San Francisco & San Joaquin Valley road has recently let contracts for building 150 platform cars to Carter Brothers, of Newark, Cal.

The Duluth, Missabe & Northern has placed orders for an additional 200 cars with the Pullman Car Co. The former order was for 400 cars.

The Lake Superior & Ishpeming road in Michigan has ordered from the Wells & French Co., of Chicago, 400 ore cars of 30 gross tons capacity, 20 flat cars 50,000 lbs. capacity. All the cars will be equipped with Westinghouse air brakes and automatic couplers.

BRIDGE BUILDING.

Alpena, Mich.—This city will shortly erect two high way bridges. Their spans will be 60 ft. and 42 ft. Fred A. Rice is City Engineer.

Bennington, Vt.—An iron plate-girder or truss bridge will soon be erected at this place, having roadway and sidewalks.

Buffalo, N. Y.—The Shipmasters' Association has complained to the Secretary of War that the Lake Shore bridge over the Maumee River, at Toledo, is an obstruction to navigation. The Mayor and other citizens of Lorain, O., have entered a similar complaint regarding the Nickel Plate Bridge over Black River at that place. The shippers of Ashtabula have similarly set forth that the highway bridge crossing Ashtabula River at the harbor obstructs navigation. These several complaints have been referred to Col. Jared A. Smith, United States Engineer for this district.

Chicago, Ill.—Bids will be received until March 2 for the steel work of the viaduct on South Halstead street, over the tracks of the Union Stock Yards & Transit Co., between Thirty-ninth and Root streets. W. D. Kent, Commissioner of Public Works, should be addressed.

Cincinnati, O.—Bids will be received until March 2, for the masonry substructure for the bridge over Flora Avenue, from Gilbert Avenue to Kenton street.

Clarinda, Ia.—Bids will be received by the Auditor of Page County until April 8 for all iron and steel bridges needed in the county during the year.

Easton, Pa.—At last week's session of the County Commissioners Prof. J. M. Porter submitted a report recommending the erection of two new bridges over the Bushkill and one over the Monocacy.

Ellicott City, Md.—The County Commissioners have contracted with Stephen Kerger for building a new bridge at Ilchester over Bonnie Branch.

Flushing, L. I.—The Board of Highway Commissioners of Flushing propose to replace Strong's Causeway Bridge, which connects the towns of Flushing and Newtown, with a new bridge to cost \$20,000.

Franklin, Pa.—The County Commissioners have awarded the building of the new bridge at Oil City to the Toledo Bridge Company.

Havana, N. Y.—Mr. George W. Aldridge, Superintendent of Public Works, Albany, N. Y., writes that on Feb. 20 he awarded the contract for the bridge over Falls Creek at this place to White & Coughlin, of Watkins, N. Y., the lowest bidders, their bid being \$3,972.

Holyoke, Mass.—Two 70-ft. spans and one 60-ft. span will soon be built at this place. John J. Kirkpatrick is City Engineer.

Iowa City, Ia.—The county Auditors of Johnson County have advertised for bids until April 6 for the construction of all county bridges which may become necessary during the present year.

Jasper, Tenn.—An iron bridge will soon be built over Little Sequachee River at a cost of about \$2,500. J. W. McReynolds, A. J. Willis and G. W. Alley are Bridge Commissioners, and it is said that bids will be received at once.

Long Branch, N. J.—The Atlantic Coast Electric Railroad Co. has secured a franchise to build a line to Asbury Park. It is said that a bridge 1,200 ft. long will be built on the line.

McKeesport, Pa.—The National Tube Works Co. will erect an iron bridge over the Pittsburgh, McKeesport & Youghiogheny tracks at Fourth and Locust streets.

Minneapolis, Minn.—It is stated that A. B. Coe, of this place, has prepared plans for a bridge across the Mississippi River at North Seventh street.

Morgantown, N. C.—The County Commissioners have voted to build another bridge over the Catawba River at this place. Mr. G. P. Irwin is Chairman.

Newark, N. J.—The bill for the construction of a bridge across the Passaic, from Newark to Harrison, has passed the state Assembly.

New York, N. Y.—The New York Harbor Line Board met at the Army Building, this city, Feb. 20. The question of reducing the proposed height of the new East River bridge from 140 ft., as fixed by the War Department, to 135 ft., was discussed. It was claimed at the meeting that this reduction of 5 ft. in height will save about

\$1,000,000 in cost. The matter of the height of the bridge will finally be decided by Secretary of War Lamont.

Red oak, Ia.—The County Auditor of Montgomery County will receive bids until April 8 for all county bridges to be built during the ensuing year.

Saginaw, Mich.—At a meeting held here, Feb. 17, the contracts for the Inter Urban railroad bridge across the Saginaw River were awarded as follows: The sub-structure to John H. Qualmann and M. C. Heinemann, of this city; the superstructure to the Detroit Bridge & Iron Works. The bridge will consist of approaches and one draw span 236 ft. long with a 96-ft. clear channel each side of the center pier. The cost of the bridge will be about \$75,000.

St. Louis, Mo.—The agitation for a third bridge across the Mississippi River at this place continues. A hearing was held before the House Committee in Washington on Feb. 18 regarding the desirability and necessity of building the bridge. The watermen object to the construction of any bridge requiring piers in the river.

Salt Lake City, Utah.—The Montana Central is building new bridges over the Sun and Missouri rivers at Great Falls.

Toledo, O.—Bids will be received until March 5 for building the masonry abutments for a bridge over Three Mile Creek, in Washington Township. C. H. Jones is County Auditor.

Topeka, Kan.—Bids will be received by the Board of County Commissioners, of Shawnee County, Kan., until March 27, for building a concrete and metal bridge (system Melan) over the Kansas River, at the foot of Kansas avenue.

Union City, Pa.—Bids have been received for an 80-ft. plate girder highway bridge and abutments as follows: Groton Bridge & Manufacturing Co., \$9,510; Wrought Iron Bridge Co., \$9,720; Youngstown Bridge Co., \$9,850; Owego Bridge Co., \$9,725; These bids were also received, not including masonry: Penn Bridge Co., Beaver Falls, Pa., \$9,530; King Bridge Co., Cleveland, O., \$9,611; Massillon Bridge Co., \$9,645; Nelson & Buchanan, \$9,750. The Groton Bridge & Manufacturing Co. secured the contract.

Washington, N. C.—The building of the proposed extension of the Wilmington, Newbern & Norfolk Railroad from Newbern to this place will necessitate the building of a large iron bridge over the Pamlico River, near its mouth, a short distance from this place. Address C. M. Whitlock, secretary of the W. N. & N., Wilmington, N. C.

Waterbury, Conn.—Bids will soon be asked for, for replacing two bridges near this place destroyed by the recent floods. The cost of the two structures will be about \$20,000.

The selectmen have awarded to the Boston Iron Bridge Company for \$8,740 the contract to build a new iron bridge over the Naugatuck River to replace the structure washed away during the recent floods. The bridge will be in one span, 150 ft. long.

Whately, Mass.—The selectmen of this place have received bids for three plate girder spans as follows: Groton Bridge & Manufacturing Co., \$1,100; Wrought Iron Bridge Co., Canton, O., \$1,087; Canton Bridge Co., \$1,200; Boston Bridge Co., \$1,220; R. F. Hawkins Iron Works, Springfield, Mass., \$1,270; Vermont Construction Co., \$1,270; J. E. Buddington, \$1,399; Dean & Westbrook, \$1,380; Horseheads Bridge Co., \$1,408; Berlin Iron Bridge Co., East Berlin, Conn., \$1,481; Edge Moor Bridge Works, Wilmington, Del., \$1,873. The contract was awarded to the Wrought Iron Bridge Co.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Maine, quarterly, \$1.50 per share, payable April 1.

Chicago, Burlington & Quincy, \$1 per share, payable March 16.

Pittsburg Junction, \$1 per share, payable March 2.

Stockholders' Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Canadian Pacific, annual, company's office, Montreal, Canada, April 1.

Gulf, Colorado & Santa Fe, annual, company's office, Galveston, Tex., March 3.

Lindell Railway Co., annual, Fourth and Olive streets, St. Louis, Mo., March 2.

Missouri Pacific, annual, company's office, St. Louis, March 10.

Norfolk & Southern, annual, company's office, Norfolk, Va., March 5.

Oregon Short Line & Utah Northern, annual, Hooper Building, Salt Lake City, Utah, March 18.

Pennsylvania, annual, Musical Fund Hall, Locust street, Philadelphia, Pa., March 10.

St. Lawrence & Adirondack, special, company's office, Montreal, Canada, March 9.

St. Louis, Iron Mountain & Southern, annual, company's office, St. Louis, March 10.

Southwestern, special, company's office, Montreal, Canada, March 9.

Sterling Iron & Railway Co., annual, Astor House, New York City, March 3.

Tennessee Coal, Iron & Railroad, annual, company's office, Tracy City, Grundy County, Tenn., March 11.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The Roadmasters' Association of America will hold its next annual convention at Niagara Falls, beginning on Sept. 8.

The Railway Signalling Club will meet on the second Tuesday of the months of January, March, May, September and November, in Chicago. Mr. George M. Basford, is secretary. The Rookery, Chicago.

The Western Railway Club meets in Chicago on the third Tuesday of each month, at 2 p. m.

The New York Railroad Club meets at the rooms of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York City, on the third Thursday in each month, at 8 p. m.

The New England Railroad Club meets at Westleyan Hall, Bromfield street, Boston, Mass., on the second Tuesday of each month.

The Central Railway Club meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

The Southern and Southwestern Railway Club meets at the Kimball House, Atlanta, Ga., on the third Thursday in January, April, August and November.

The Northwestern Railroad Club meets at the Ryan Hotel, St. Paul, on the second Tuesday of each month, at 8 p. m.

The Northwestern Track and Bridge Association meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2:30 p. m.

The mercia Society of Civil Engineers meets at the House of the Society, 127 East Twenty-third street, New York, on the first and third Wednesdays in each month, at 8 p. m.

The Western Society of Engineers meets on the first Tuesday in each month, at 8 p. m. The headquarters of the society are at 1736-1739 Monadnock Block, Chicago. The business meetings are held on the first Wednesday at its rooms. The meetings for the reading and discussion of papers are held on the third Wednesday at the Armour Institute, Thirty-third street and Armour avenue.

The Engineers' Club of Philadelphia meets at the House of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month, at 8 p. m.

The Boston Society of Civil Engineers meets at Westley Hall, 96 Bromfield street, Boston, on the third Wednesday in each month, at 7:30 p. m.

The Engineers' Club of St. Louis meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

The Engineering Association of the South meets on the second Thursday in each month, at 8 p. m. The Association headquarters are at The Cumberland Publishing House, Nashville, Tenn.

The Engineers' Society of Western Pennsylvania meets in the Carnegie Library Building, Allegheny, Pa., on the third Tuesday in each month, at 7:30 p. m.

The Technical Society of the Pacific Coast meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

The Association of Engineers of Virginia holds informal meetings on the third Wednesday of each month, from September to May, inclusive, at 710 Terry Building, Roanoke, at 8 p. m.

The Denver Society of Civil Engineers meets at 36 Jacobson Block, Denver, Col., on the second Tuesday of each month except during July and August.

The Montana Society of Civil Engineers meets at Helena, Mont., on the third Saturday in each month, at 7:30 p. m.

The Engineers' Club of Minneapolis meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

The Canadian Society of Civil Engineers meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday, at 8 p. m.

The Civil Engineers' Club of Cleveland meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month, at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

The Engineers' Club of Cincinnati meets at the rooms of the Literary Club, No. 24 West Fourth street, Cincinnati, O., on the third Thursday in each month, at 7:30 p. m. Address P. O. Box 333.

The Engineers' and Architects' Club of Louisville meets in the Norton Building, Fourth avenue and Jefferson street, on the second Thursday each month at 8 p. m.

The Western Foundrymen's Association meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. S. T. Johnston, Monadnock Block, Chicago, is secretary of the association.

The Engineers' Club of Columbus, (O.), meets at 12½ North High street, on the first and third Saturdays from September to June.

The Engineers' and Architects' Association of Southern California meets each third Wednesday of the month in the Hall of the Chamber of Commerce, Los Angeles, Cal.

The Engineers' Society of Western New York holds regular meetings the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

The Civil Engineers' Society of St. Paul meets on the first Monday of each month, except June, July, August and September.

The Engineers' Society of Western New York meets on the first Monday of each month at the Society's rooms in the Buffalo Library.

General Passenger Agents' Association.

The forty-first annual meeting of the American Association of General Passenger and Ticket Agents will be held in the Hotel Jefferson, Richmond, Va., on Tuesday, March 17. The annual address will be delivered by B. W. Wrenn, Passenger Traffic Manager of the Plant System.

Eastern Association of Car Service Officers.

This Association, composed of Car Accountants and Superintendents of Car Service of railroads using Eastern standard time, held a convention in Philadelphia last week. The President of the Association is A. F. Currier (N. Y., N. H. & H.) and the Secretary is M. Magoff (Central Vermont).

Engineers' Club of Cincinnati.

At the February meeting one new member was elected and two applications were presented. A memoir of Mr. Charles Wood, late Chief Engineer of the C. H. & D., was presented by the committee appointed for that purpose, and was adopted, ordered entered on the records of the club and an engrossed copy sent to the family of Mr. Wood.

Mr. Charles E. Lindsay read an interesting paper on the Organization and Operation of a Maintenance of Way Department.

The Civil Engineers' Club of Cleveland.

The regular meeting of the club was held Tuesday evening, Feb. 11, 1896. Fifty-three members and visitors were present. Nominations for officers for the ensuing year were presented by the Nominating Committee as follows: President, Chas. S. Howe; Vice-President, James Ritchie; Secretary, F. A. Coburn; Treasurer, Jas. C. Wallace; Librarian, A. Lincoln Hyde; First Director, J. L. Culley; Second Director, J. C. Beardsley. Mr. Walter Miller gave an interesting talk on "Experiences in an Engineer's Practice." Discussions on the bill to fix the standard of weights and measures by the adoption of the metric system was deferred to the next meeting. Dr. Dayton C. Miller had an exhibition some of the Case School standard weights and measures of the metric system.

PERSONAL.

—Mr. F. E. House is now Chief Engineer of the Pittsburgh & Lake Erie road. His former title was Engineer of Maintenance of Way.

—Mr. John Hayr, Roadmaster of the Montreal district of the Grand Trunk, has resigned his position, which he has held for the last 20 years.

—Master of Trains H. E. Hutchins, of the Savannah Division of the Savannah, Florida & Western, has resigned, and Yard Master Wright, of Savannah, will be promoted to the position.

—Señor Luis Espinosa, the well-known engineer, who has been in charge of the drainage works of the Valley of Mexico, has been appointed Director of the Practical School of Mines, of Pachuca, Mex., to succeed the late Jose Maria Cesar.

—Mr. A. A. Cohill has resigned his position as Assistant City Engineer of Williamsport, Pa., to accept the position of Supervisor of the Subdivision of the Norfolk & Western, between Roanoke and Radford, Va., with headquarters at East Radford, Va.

—Mr. C. T. Dabney, Division Superintendent of the Western New York & Pennsylvania, will hereafter have charge of both the Buffalo and Rochester divisions of the company, Mr. J. W. Watson, who has heretofore been Superintendent of the Rochester Division, having resigned.

—Mr. Robert L. Harris, C. E., is Chief Engineer of the South Shore Railway Company (Limited) of Nova Scotia with headquarters at Yarmouth, N. S. This railroad is to be built between Yarmouth and Halifax, and will be about 200 miles in length. Mr. Harris continues his office and permanent address at No. 1 Broadway, New York.

—Mr. R. C. Fraser, for several years the Boston representative of the *Railroad Gazette*, and who resigned last June to accept the position of Sales Agent for the New York Vulcanizing Co., has resigned the latter position and has associated himself with C. H. McKibbin & Co., of 120 Broadway, N. Y., dealers in railroad supplies.

—Mr. Charles L. Morgan has been appointed Engineer in Chief of the London, Brighton & South Coast road of England. He succeeds Mr. F. D. Bannister, who had held the position for more than 35 years and was retired last year with a pension of \$5,000 a year. Mr. Morgan has been Chief Assistant Engineer of the Great Eastern of England.

—Mr. W. A. Mills, who was Assistant to the late President C. C. Waite, of the Columbus, Hocking Valley & Toledo, has been made General Manager of the road. This is a new office. Mr. Mills has been in the employ of the company for 25 years. President Waite's successor will be elected at the meeting of the Directors on March 27. Mr. Mills has also been Vice-President of the Wells-ton & Jackson belt line, operated by the Columbus, Hocking Valley & Toledo.

—Mr. Albert F. Allen, General Superintendent of the Elmira, Cortland & Northern road, has resigned that office, the control of the property having passed to the Lehigh Valley. Hereafter it will be operated as a division of that company. Mr. C. W. Williams, General Freight and Passenger Agent of the road, has also resigned, and the jurisdiction of the general officers of the Lehigh Valley has been extended to cover this road, as announced in another column.

—Mr. D. H. Nichols, formerly General Superintendent on the St. Louis & San Francisco and in its service for many years, has been appointed General Superintendent of the Pecos Valley road, in New Mexico. Mr. Jefferson N. Miller, who had been Vice-President and General Manager of the company practically since its organization, has resigned. These positions are now held by Mr. E. O. Faulkner, formerly of the Atchison, Topeka and Santa Fe, as noted in these columns some weeks ago.

—Mr. Ward B. Wetherell, General Agent of the Erie Freight Department at Cleveland, has been appointed General Northwestern Agent of the Erie at St. Paul, vice G. J. Borup, resigned. The appointment takes effect March 1. Mr. Wetherell has been with the Erie twenty years. He began as a clerk in the general freight office at Cincinnati. Several years later he was appointed Cleveland agent of the Erie Despatch. As General Agent at Cleveland, Mr. Wetherell will be succeeded by John B. Cochran, who has been senior Contracting Agent for the company at that point.

—Judge R. H. Cochran, of Toledo, for some time President of the company which built the Wheeling Bridge & Terminal road, including the bridge over the Ohio River, died at Toledo last week. He was a lawyer by profession, but for many years he had been chiefly interested in railroad building. He was an early director of the Wheeling & Lake Erie. His most recent important work was in building the Terminal System at Wheeling. Since that work was finished he has been promoting the Cleveland & Wheeling road projected from the Ohio River opposite Wheeling northwest through Ohio.

—Mr. C. R. Neher, Division Engineer of the Rochester Division of the Western New York & Pennsylvania, has resigned. Mr. George Houlston, now Division Engineer of the Buffalo Division, will have jurisdiction over the Rochester Division. The division superintendency of the latter division has also been abolished and the division has, so far as operating is concerned, been practically consolidated with the Buffalo Division, though it is not intended to merge it completely. The changes have been made as a matter of economy, and will be followed by other reductions in the number of track super-visors, master carpenters and other forces.

—Mr. D. H. Rhodes has been appointed Superintendent of the Wichita & Western road in Kansas. This is a line of about 125 miles out of Wichita, owned by the Atchison, but for some time past operated by an independent receiver. Heretofore the operation of the road has been included in the jurisdiction of Mr. C. J. Hartman, Division Superintendent of the Atchison, but his jurisdiction on the Atchison lines has been recently considerably enlarged, and he is no longer able to look after this branch road. Mr. Rhodes, the new Superintendent, has been recently General Foreman of the road and will continue to retain the duties of that position.

—Mr. John J. Byrne, General Passenger Agent of the Atlantic & Pacific, located at Los Angeles, Cal., and Mr. H. C. Bush, General Freight Agent, with headquarters at San Francisco, Cal., have presented their resignations to Mr. C. W. Smith, the Receiver of the property. It is understood that hereafter there will be no general offices of the traffic department in California, the freight and passenger departments being moved to Albuquerque, N. M. Mr. John L. Trustow, Assistant General Passenger Agent at San Francisco, has also resigned. Mr. Byrne is also General Passenger Agent of the Southern California. Mr. Bush will remain with the Atlantic & Pacific as General Agent of the Freight and Passenger departments.

—Mr. C. K. Lord, Third Vice-President of the Baltimore & Ohio Railroad, was last week elected President of the Consolidation Coal Co., of Baltimore. He succeeds Mr. Charles F. Mayer, the former President of the Baltimore & Ohio. At the same meeting a change was made

in the Board of Directors of the coal company, and Messrs. Louis Fitzgerald, Edward R. Bacon and Eugene Delano, who were recently elected Directors of the Baltimore & Ohio Railroad, and who represent the New York interests in the property, were elected directors of the coal company. Mr. Lord, it is understood, retains his connection with the railroad company. Before going to the Baltimore & Ohio he was for some time associated with coal mining interests, part of the time with Senator J. N. Camden, of West Virginia. The interests controlling the Consolidation Coal Company are practically identical with those interested in the Baltimore & Ohio.

—Mr. F. D. Adams, the veteran Master Car Builder of the Boston & Albany Railroad, has resigned that office, to take effect on March 1. Mr. Adams has been in charge of the car department of the Boston & Albany since 1870. He now retires on account of advanced age. He was born in 1823 and is probably, not only in age, but in actual experience, the oldest master car builder in active service in this country. He is also without doubt the best known. He was one of the organizers of the Master Car Builders' Association and one of its earliest presidents; and has regularly attended all its annual conventions except one or two, and has always taken an active part in the discussions at the conventions as well as in the other work of the Association. He began his life work with the Norwich Car Company in 1847 and was afterward with several other car building firms. For a time he was Master Car Builder of the Buffalo & Erie, now part of the Lake Shore.

—Mr. Christopher C. Waite, President of the Columbus, Hocking Valley & Toledo road, died of pneumonia at Columbus, O., on Friday of last week. Mr. Waite fell ill while on the road inspecting the new branch to the Jackson County coal fields in Ohio. When he got to Columbus he was too ill to be removed from his private car and he died there Feb. 21 after a week's illness. He was only 52 years old, and up to the time of his fatal illness had been in robust health. He was a son of the late Chief Justice Waite, of the United States Supreme Court. He had been in railroad service since 1864, his first work being as Assistant Engineer on the surveys of the Rensselaer & Saratoga road. For a few years he was in the engineering department of the Croton Water Works at New York, but went West in about 1867 and became Chief Engineer on the surveys for the Columbus & Toledo road, now the Columbus, Hocking Valley & Toledo. He was afterward engaged on surveys for other Ohio roads. In 1881 he returned East as Assistant to the President of the New York, Lake Erie & Western, but within a year became Vice-President of the Cincinnati, Hamilton & Dayton. He also became General Manager of this road, and held these positions until 1889, when he went to the Columbus, Hocking Valley & Toledo. On leaving the service of the Cincinnati, Hamilton & Dayton the directors adopted complimentary resolutions speaking of his faithful and efficient services for the seven years he was with that company, and saying, among other things that "assuming control of the property when it was non-dividend paying he had by his skill and energy developed it into a profitable and successful corporation with earnings in the past year greater than have been known on the main line for more than 20 years and on the leased lines larger than ever before secured in their history." Mr. Waite had been equally successful in his management of the Columbus, Hocking Valley & Toledo.

ELECTIONS AND APPOINTMENTS.

Baltimore, Chesapeake & Western—The following are the incorporators of this company, which is now seeking incorporation in Maryland: Allston Gerry, of New York City; George E. Boynton, Treasurer of the Columbian Iron Works & Shipbuilding Company, of Baltimore; Frank C. Drane, formerly of the Staten Island Railroad, now of Baltimore; P. H. C. Birely, of Frederick City; George P. Sheffer, Bolivar; John Q. A. Sand, Dr. W. J. Gascoyne and W. R. D. Gascoyne, of Baltimore.

Cleveland, Cincinnati, Chicago & St. Louis—The following additional changes in the freight traffic organization are announced: R. P. Buchanan, Assistant General Freight Agent, with headquarters at Cincinnati, O., will have jurisdiction over Chicago Division south of Indianapolis, Ind., including the White Water Division; also Cincinnati Division, Cincinnati to Columbus, O., in addition to Michigan Division as heretofore. Agents on Chicago, White Water and Cincinnati Divisions, formerly reporting to General Freight Agent, will hereafter report to Mr. Buchanan.

L. L. Hyde, Assistant General Freight Agent, in charge of Tariff and Claim Departments, with headquarters at Cincinnati, O., vice C. V. Lewis, resigned.

James Keavey, who has been General Agent at Grand Rapids, Mich., for several years, has been promoted to the position of District Freight Agent in charge at freight business on the Michigan division, with headquarters at Benton Harbor, Mich.

Cleveland, Lorain & Wheeling—Henry T. Sanford has been elected Treasurer of this company, with office in Cleveland.

Delaware, Lackawanna & Western—At the annual meeting to-day of stockholders of the railroad company, in New York on Feb. 25, the old executive staff was re-elected. The new Board of Managers chosen consists of John I. Blair, Eugene Higgins, William W. Astor, William Rockefeller, Henry A. C. Taylor, J. Rogers Maxwell, George F. Baker, James Stillman, Alexander T. Van Nest, Frank Work, Hamilton McK. Twombly, Harris C. Fahnestock, Frederick W. Vanderbilt, and M. Taylor Pyne. The only new member of the Board is Mr. Pyne, who takes the place made vacant by the death of Mr. George Bliss, of Morton, Bliss & Co.

Elmira, Cortland & Northern—The Lehigh Valley is now operating this road. Previous to the formal transfer President George S. Edgell and Vice-President Henry W. Maxwell resigned, and President E. P. Wilbur and Vice-President Charles Hartshorne, of the Lehigh Valley, were elected in their places.

Grand Trunk—James Stephenson having tendered his resignation as Superintendent, F. H. McGuigan has been appointed General Superintendent of all lines east of the St. Clair and Detroit rivers, with office at Montreal, P. Q.

Kansas City, Shreveport & Gulf—The annual meeting of the stockholders of the company was held last week, and the following directors were chosen: A. E. Stillwell, E. L. Martin, W. S. Taylor, S. Levy, Jr., F. S. Hammond, W. A. Williams, Peter J. Trezevant, Peter Youree, J. T. Nothenius, Henry Florsheim and T. Alexander. The directors elected: Arthur E. Stilwell, President; S. Levy, Jr., and W. S. Taylor, Vice-Presidents; F. S. Hammond, Secretary and Treasurer; J. T. Nothenius, Assistant Secretary; A. L. Howe, Assistant Treasurer.

Marshfield & Southeastern—The incorporators of this company, which succeeds the Port Edwards, Centralia & Northern, are Walter A. Scott, Chicago; Thomas B. Scott, St. Paul; H. C. Ross, Chicago; Patrick M. Halloran and A. A. Hopkins, Marshfield; they are also the directors. Walter A. Scott is the principal stockholder, holding 3,112 of the 4,000 shares; Thomas B. Scott, 885 shares.

Mobile, Jackson & Kansas City—At the annual meeting of the stockholders held at Mobile last week the following directors were elected: W. D. Stratton, Lathrop R. Bacon, W. A. Smith, W. G. Chaster, H. A. Austill, J. W. Whiting, James K. Glennon, Rufus Dane, W. H. McIntosh, J. L. Rapier and F. B. Merrill. W. D. Stratton is a well-known railroad contractor of New York City; Lathrop R. Bacon is the head of the New York firm of Bacon, McKinley & Sherman, bankers and brokers; W. H. Smith is Manager of the Mercantile Bank of London, and W. G. Chaster is also of London. They represent the New York and English interests in the road. The following officers have been elected: Col. F. B. Merrill, President and General Manager; Hon. H. A. Austill, Vice-President and General Solicitor; Ralph G. Stratton, Secretary and Treasurer. Ralph G. Stratton is a son of W. D. Stratton, of New York.

Monongahela River—J. A. Fickinger, formerly General Manager of the Gauley Hardwood Lumber Co., of West Virginia, and Chief Engineer of several West Virginia roads, has been appointed General Manager of the road.

Northern Pacific—Receivers Edwin H. McHenry and Frank G. Bigelow have issued the following circular, dated New York, Feb. 21: Having been appointed Receivers of the Northern Pacific Railroad Company by the United States Circuit Court of the Seventh, Eighth and Second Circuits, on Sept. 28, 1895, Sept. 30, 1895 and Feb. 21, 1896, respectively, we have taken possession of all of the property of the said railroad company in said circuits and have made the following appointments of heads of departments: J. W. Kendrick, General Manager; C. W. Bunn, General Counsel; John C. Spooner and George P. Miller, Advisory Counsel; W. H. Phipps, Land Commissioner; John Scott, Comptroller; M. P. Martin, Auditor; C. A. Clark, Treasurer. R. H. Relf is appointed Secretary pro tem. at St. Paul, and George H. Earl Secretary pro tem. at New York.

Pecos Valley—D. H. Nichols has been appointed General Superintendent. W. I. Church, General Freight and Passenger Agent, having resigned, the position has been abolished, and all traffic matters should be referred to General Manager Faulkner. E. F. Draper has been appointed Auditor and Cashier.

St. Louis & San Francisco—Official announcement was made on Feb. 25 that after March 1 the company will have its own exclusive representatives in the traffic department at Chicago, Cincinnati, Pittsburgh and New York. The following appointments will take effect on March 1: J. H. Cook, General Agent at Chicago; W. I. Van Ness, General Eastern Agent at New York; H. H. Franklin, General Agent, Cincinnati; O. M. Conley, General Agent, Pittsburgh.

St. Louis, Peoria & Southern—The Directors of this new Illinois company are: H. R. Durkee and J. S. Brewer, of Chicago; Wm. F. Niedringhaus, W. E. Guy, W. E. Huse, George F. Carpenter and C. D. McLure, of St. Louis; Louis Kalb, of Marine, Ill.; E. W. Guy, of Belleville, and Clinton L. Conkling and Joseph M. Grout, of Springfield.

Southern—General Roadmaster J. A. Dodson, and Mr. D. W. Lum, Superintendent of Bridges, whose offices have been located at Washington, D. C., will remove their headquarters by March 1 to Atlanta, Ga.

Texas Central—At the annual meeting of the stockholders at Waco, Tex., Feb. 14, the following directors were elected for the ensuing year: E. Rotan, J. S. McLendon, R. B. Parrott, Charles Hamilton, of Waco; Henry K. McMurry and Walter Ferguson, of Stamford, Conn., and A. D. Moran, of New York. The directors elected Henry McMurry, President; Charles Hamilton, Vice-President and General Manager; Richard Oliver, Secretary and Treasurer.

Western Pennsylvania—At a meeting of the stockholders in Philadelphia last week the following officers were elected: President, John P. Green; Directors, Enoch Lewis, George B. Roberts, Samuel Rea, N. Parker Shortridge, Henry D. Welsh, and George Wood.

RAILROAD CONSTRUCTION, Incorporations, Surveys, Etc.

Alameda & San Joaquin Valley—It is thought that this road which is now being built out of Stockton, Cal., will be completed its entire length early in May next. The road when completed will be 36 miles long, reaching the coal mines at Corral Hollow and passing through Lathrop and Tracy. The mines are owned by the San Francisco & San Joaquin Coal Co., which is building the railroad. So far 26 miles of line has been completed southwest of Stockton. The road is standard gauge and is being substantially built. Its maximum grade is 9% ft. to the mile. There is only one important bridge 360 ft. long with a 200 ft. draw span, though there are a number of smaller bridges and considerable trestle work. The road is not bonded, and the cost of construction has been met by the coal company named above. George A. Atherton, of Stockton, is Chief Engineer. The other officers are given in another column. The grading is about half completed on the last 10 miles, which is light mountain work. The contractors for grading are O'Brien Bros. and John Kelso, of Tracy, Cal.

Ann Arbor—This company has been engaged for about two years past in making important improvements to its road and securing a uniform maximum grade on the different divisions. This has involved the construction of several short sections of new road. It is expected that by the end of the present year the company will have built altogether some 14 miles of new main line in the state of Michigan to replace the existing main line at points where both the alignment and grades are expensive or dangerous to operate. The trestles and wooden bridges on the road have been almost displaced by culverts and girders.

Arkansas & Choctaw—President Cleveland having failed to veto the bill which recently passed Congress authorizing this company to build through the lands of the Choctaw Nation in the Indian Territory, it has become a law. The proposed route through the Choctaw Nation lands is from a point in Little River County near the state line of Arkansas northwesterly to the town of Atoka. It is proposed to connect with the Kansas City, Ft. Scott & Gulf. R. H. Keith, of Kansas City, is President and Samuel West, of St. Louis, is Treasurer of the company.

Baltimore & Ohio—Engineers are making surveys for a branch from Buckhannon, W. Va., to connect with the Belington branch, at the mouth of the Buckhannon River, 16 miles. The route will require little heavy grading. The contracts will probably be let about April 1. Upshur County, W. Va., has voted \$30,000 toward building the line.

Baltimore, Chesapeake & Western—A bill is now before the Maryland legislature to incorporate this company to build a road between Baltimore and Hagerstown with various branches, making a total mileage of 300 miles. George E. Boynton, Treasurer of the Columbian Ship Building Co., of Baltimore, is one of the incorporators and F. C. Drane, of Baltimore, is the active projector.

Brainerd & Northern Minnesota—The bill which recently passed Congress authorizing the company to secure right of way through the Leech Lake and the Chippewa Indian reservations in Northern Minnesota for its proposed northern extension, has become a law.

Brooksville—This road is now graded from Wellsburg on the Ohio River, east of Newport, where the new line connects with the Chesapeake & Ohio to Brooksville, the county seat of Bracken County, Kentucky. The route from Wellsburg to Brooksville is up the valley of Locust Creek, and the track follows the turnings of this stream to save cuts and tunnels. The distance is 10 miles. The road may, and probably will, be extended to Mt. Olivet, the county seat of Robertson County, 12 miles beyond Brooksville. The track is partly laid from Wellsburg south. The work of completing the track laying may be given out to contract. The road is being built and equipped by the farmers, merchants and business men along the route who have subscribed for the stock. These subscriptions have been paid in, and there are no outstanding claims. Younger Alexander, of Brooksville, Ky., is President, and W. H. Venable, of Charleston, W. Va., is Chief Engineer.

Carolina Central—The surveys were last week completed for a branch of this road, operated by the Seaboard Air Line, to the two growing cotton mill towns of Henrietta, N. C., and Spartanburg, S. C. It is proposed to have the road completed by June 1. The connection with the main line will be at Rutherfordton.

Chesapeake & Ohio—Last week a party of surveyors began running lines for a branch through Pocahontas County, West Virginia, from Hintersville, up Knapps Creek, 20 miles. No definite information has been given out, but it is supposed that they are at work on one or all of the three proposed new lines upon which the management acted favorably several months ago. One was an extension of the Hot Springs branch, by a new route, to connect with the main line again at Kanawha Falls. This would secure a double track between the points named, the rugged character of the New River Valley prohibiting the double tracking of the main line except at great expense. Another enterprise was the building of a branch through the coal and timber fields of Pocahontas County, to connect with the West Virginia & Pittsburgh. The third was a line from the main line to connect with the West Virginia Central & Pittsburgh near Hintersville. This latter plan is said to have been agreed upon between the two roads, each having pledged itself to reach Hintersville within a certain time. The West Virginia Central & Pittsburgh has had surveyors go over the mountains which divide the two watersheds.

Dakota, Wyoming & Missouri River—Mr. W. S. Coad, the President of this road, is now in negotiation with New York capitalists and is confident of completing arrangements for resuming construction work on this line, in which he has been interested for a number of years. He has been able to complete and equip eight miles of the line out of Rapid City, S. D. Much grading has been done between the present end of track and Mystic, about 32 miles west of Rapid City in the Black Hills mining district. This would connect the Black Hills line of the Fremont, Elkhorn & Missouri River with the Deadwood line of the Burlington & Missouri River. C. D. Crouch, of Rapid City, S. D., has been the contractor for the work heretofore done, and will probably complete the grading when it is resumed. Mr. Coad proposes also to extend the line easterly across South Dakota to the Missouri River at Chamberlain, which is the present westerly terminus of the Dakota lines of the Chicago, Milwaukee & St. Paul. A bill to authorize the construction of the bridge across the Missouri River at Chamberlain passed the United States Senate in January. The present officers of the company are given in the column of Elections and Appointments.

Detroit & Mackinaw—The surveys for the proposed southern extension have just been completed. This line is to be built from Emery Junction directly south to Omer, a distance of about 20 miles. The construction of this extension has been definitely decided upon and active work will begin as early in the spring as the weather permits. The terminus at Omer is within a few miles of Saginaw Bay.

Duluth & Dakota—The following account of this project, which is commonly known as the Farmers' Railroad, promoted by D. W. Hines, of Drayton, N. D., is sent us by an officer of the company: The road is to be built from Deer River, Minn., to Portal, N. D., about 300 miles, and a number of branches are contemplated through the Red River Valley. The route is from Deer River to Thief River Falls and Warren, Minn., Drayton, St. Thomas and Portal, N. D. The line goes through the Red Lake reservation, soon to be opened to settlement, which has fine pine and meadow lands, then across the Red River Valley. The farmers and business men in the valley are taking most of the stock. The grading is being done mostly by farmers, and about 40 miles is partly graded. It is expected to grade 200 miles before next harvest, with a small outlay of cash, the grading being done mostly for stock in the roads. "It is something of a novel way to build a road, but we are meeting with good success in selling stock and getting right of way." There will be but one or two bridges of importance, and they will be across the Red River. The officers are: D. W. Hines, President; R. S. Munger, Vice-President; W. P. Goff, Secretary, and J. D. Wallace, Treasurer, all of Drayton, N. D.

Kingson & Lake Katrine—Articles of incorporation of the railroad company were filed in Albany, N. Y., last week. This company has \$100,000 capital, and proposes to build a road from Kingston, on the Hudson River, to Lake Katrine.

Marshfield & Southeastern—This road was incorporated in Wisconsin last week. The company has acquired the property of the Port Edwards, Centralia & Northern. The incorporators are Walter A. Scott, Chicago; Thomas B. Scott, St. Paul; H. C. Ross, Chicago; Patrick M. Halloran and A. A. Hopkins of Marshfield, Wis. The road is 30 miles long, and extends from Port Edwards to Marshfield, on the Wisconsin Central.

Montreal & Ottawa.—It is stated that the Canadian Pacific has agreed to proceed with the construction of this operated line, and will, during the coming summer, build 23 miles of the road, from Point Fortune to Alport, Russell County, Que. The line now operated is from Vandrenik, along the south shore of the Ottawa River, west toward Ottawa, for 23 miles, Point Fortune being the present terminus.

Necedah Junction, Tomah, Richland Center & Northport Junction.—This company is a new Wisconsin corporation, organized to build from Tomah northwest to a connection with the Chicago & Northwestern. C. E. Quigg is President, and D. J. Aler Secretary, both of Tomah, Wis.

New Bedford.—The city of New Bedford, Mass., is to build a railroad in connection with its water-works from Brayley's Station on the Old Colony road (being about seven miles from the city of New Bedford) to Little Quittacas Pond, all of the 4½ miles lying in the town of Freetown, Mass. The railroad is to be used for the construction of a pipe line and the necessary structures and machinery for the pumping station, near Little Quittacas Pond, and also for the transportation of coal, etc., to the works after the completion of the contract work. The line is laid out and construction has already been commenced; the contractor is W. L. Miller, No. 166 Devonshire street, Boston, and the work will be finished about July 1, 1896. The work is easy, the deepest cut being 12 ft. and the maximum grade is 1.7 per cent.; the maximum curve is a 6-degree curve; there are no iron bridges; there is to be a trestle across the Great Bolton Swamp, which is nearly 6,200 ft. long. The work will cost, independent of equipment, a little over \$50,000, and the road will probably be equipped to be run by electricity on the principle of the storage battery; the gage is the standard gage, 4 ft. 8½ in. and the rails are a 56-lbs pattern. George S. Rice and George E. Evans, of Boston, are the engineers.

New Roads.—Mr. C. LeB. Miles, C. E., has just completed the survey for a line from Aroostook, N. B., across the Aroostook River to Limestone in Maine. This road is not, as stated last week, projected as a branch of the Canadian Pacific, although it will, if built, be a good connection for that line. The new line will be about 10 miles long. A charter for the new line has not yet been granted, but a company is being formed to apply for a charter and a government subsidy.

Pecos Valley.—General Manager E. O. Faulkner announces that the engineers, under Chief Engineer Ballard, will start from Roswell, N. Mex., shortly, to go over the line already surveyed to the Texas Panhandle and determine what revision of location may be considered advisable.

Rio Grande Western.—The extension of the southern lines of this company to the mines at Richfield, Utah, is being built under the name of the Sevier Railroad Company, which was organized a few years ago and owns the road operated by this company between Manti and Salina. About 10 per cent. of the new work is now completed.

St. Lawrence & Adirondack.—The new line being built by this company, under the name of the Southwestern Railroad, to shorten its route to Montreal, is making good progress. It will be about 13 miles long, from Beauharnois to Caughnawaga, Quebec. It connects with the Grand Trunk at the former terminus and at the latter town with the Canadian Pacific, whose tracks are then used into Montreal. The new Montreal line when completed will then be as follows: From Windsor Street Station, via the Canadian Pacific, to Caughnawaga on the south side of the St. Lawrence River, 9 miles; thence via the Southwestern Railway, now being built by Dr. Webb from Caughnawaga to Beauharnois, 13 miles (this portion runs along the south shore of the St. Lawrence River); thence from Beauharnois to Valleyfield, 13 miles, which has been leased from the Grand Trunk by the Southwestern Railway and is being rebuilt with heavy rail, new bridges, sidings, &c.; and thence from Valleyfield by a new loop line connection built by the St. Lawrence & Adirondack, 3 miles; and over the St. Lawrence & Adirondack tracks to Malone, 29 miles; making a total of 67 miles Montreal to Malone.

St. Louis, Peoria & Southern.—Articles of incorporation of the company were filed at Springfield, Ill., Feb. 19. The proposed object is to construct a road from East St. Louis through the counties of St. Clair, Madison and others, to a point on the Mississippi River opposite Clinton, Ia. The Board of Directors are: H. R. Durkee and J. S. Brewer, of Chicago; Wm. F. Niedringhaus, William E. Guy, Wm. E. Huse, of St. Louis, and others. The road is intended as an extension of the St. Louis & Eastern.

San Pete Valley.—General Manager Bruback, of Salt Lake City, states that it has been finally decided to make this line standard gage its entire length. Contracts have been made for the new ties, and the work of changing the gage will be commenced with favorable weather. The road extends from Manti to mines at Nephi, about 43 miles. When the road is ready to operate standard gage trains they will probably be run through to Salt Lake City from its northern terminus at Manti under a trackage agreement with the Union Pacific. It is stated that the rails in the present narrow gage track will be used by the company for the proposed southern extension, the construction of which is yet indefinite.

Seneca County.—This is a new company recently organized in New York state to build a road from Seneca Falls, near the head of Cayuga Lake, across Seneca County to a connection with the Lehigh Valley, at the head of Seneca Lake. John P. Dolan has the contract for some work on the new line, which will be about 10 miles long.

South Jersey.—The plan for building the Ocean City branch of this line by issuing receivers' certificates to cover the cost of construction has been abandoned. It has now been arranged that the new road is to be built by a separate company organized by the large owners of real estate about Ocean City. The line when built is to be turned over to the South Jersey for operation, that company guaranteeing the payment of interest on the fixed charges of the new road. Work on the new line is to be begun as early as possible, and it is stipulated that trains will be running into Ocean City by July 1 next. The new line will be about 12 miles long, branching off at the present main line of the South Jersey, near Petersburg, and extending directly east to the beach at Ocean City.

Tennessee Central.—The present indications are that the road will now be completed. The company has been reorganized, and Major C. O. Godfrey has been made President. The indebtedness is about \$300,000, and the terms of settlement that have been accepted by a large number of the creditors are 25 per cent. cash or 50 per cent. bonds in 90 days. R. L. Engle is Chief Engineer and Mr. W. T. Carley is Engineer of Bridges and Buildings.

Virginia Roads.—The Virginia Legislature has been flooded with bills incorporating railroad companies. On Feb. 17 the State Senate passed bills incorporating the Virginia & Northwestern, the Blue Ridge, the Portsmouth, Pig's Point & Newport News and the South-eastern & Atlantic, and bills amending the charters of the Chesapeake & West Virginia, the Marion & Rye Valley and the Alexandria & Fairfax.

Washington, Annapolis & Chesapeake.—This company has been organized to construct a road from Washington, D. C., by way of Annapolis, Md., to points on the Chesapeake Bay. It is to be about 26 miles long. A connection by steamer across the Chesapeake Bay with the eastern shore counties in Maryland and the Atlantic coast is proposed.

Wyoming & Black Hills.—This company has been organized in Wyoming by Henry M. Cutler, of Boston; Valentine Baker, of Cheyenne, Wyo., and Apha E. Hoyt, of Sun Dance, Wyo. The object of the company is to build a line from Spear Fish, S. D., to Sun Dance, in order to reach the coal fields in that vicinity.

Washington County.—Mr. Henry Hill, of Augusta, constructing engineer of the railroad, states that he has nearly completed the working maps of the road and work will be rapidly pushed to completion in the spring in building the line. It will extend along the Maine Shore Line from Calais to Eastport, and from Eastport to Machias.

Wilmington, New Berne & Norfolk.—Active steps are being taken for the building of two extensions of this road, now in operation from Wilmington to New Berne, N. C., 87 miles. It is proposed to extend the road from New Berne to Washington, N. C., 32 miles, along the line proposed by the projector of the road when its construction was first begun. This line would give an entrance to Norfolk, Va., if the Norfolk & Southern extends from Plymouth to Washington, N. C., 30 miles. This, it is said, will probably be done, if the extension to Washington is built. The route from Wilmington to Norfolk, thus formed, would be about 230 miles long.

Electric Railroad Construction.

Asheville, N. C.—The business men of Asheville and Rutherfordton, distant apart 42 miles, are about to form a company to build an electric railroad between the two places via Hickory Nut Gap in the Blue Ridge Mountains. It was at first proposed to have a steam railroad, but an electric road has been decided to be more available for the purpose. The road will connect with the Seaboard Air Line at Rutherfordton and give Asheville a connection with that road.

Aurora, Ill.—The Secretary of State has granted a license to the Carpentersville, Elgin & Aurora Railway Co. to increase its capital stock from \$50,000 to \$150,000. The increase will be used to build the Elgin-Aurora connection, the original capital stock having been expended in building the Elgin-Dundee Road.

Baltimore, Md.—Additional contracts for machinery for the power stations of the Columbia & Maryland Electric Railway have been awarded, completing the equipment for these plants. The Knowles Steam Pump Works have the contract for siphon condensers for the Elgin station; Thomas K. Carey & Brothers Co. and Bartlett & Hayward the contract for condensers for the Hyattsville station, eight feed water, two fire, two double circulating, two automatic feed and four double vertical air-pumps. The aggregate of all the contracts is between \$20,000 and \$25,000.

The Baltimore Traction Co. has commenced work on the extension of its electric road to Westport, in the suburbs.

Charleston, W. Va.—The contractors who are changing the Capitol City Street Railway from a horse to an electric line are pushing the work rapidly, and it is hoped to open the line and finish the new power within a month. The road is being extended to take in the South Side and other suburbs.

Denver, Col.—The Denver, Globeville & Golden Rapid Transit Co. has asked the aldermen for a franchise for an electric railroad 32 miles long. There will be a tunnel required, which it is estimated will cost \$20,000.

Greenbush, N. Y.—The town trustees have granted a franchise to the Albany, Greenbush & Bath Co. for an electric railroad. The road will extend from Greenbush to Bath, about five miles, but will not cross the Hudson to Albany. The contract requires the road to be completed in one year from the time the work is begun.

Hagerstown, Md.—Ex-Mayor R. J. Halm, representing a Philadelphia syndicate has asked for a franchise to build about seven miles of electric railroad in Hagerstown, with an extension to Williamsport. The company agrees to give a bond of \$15,000 as security for completing the road, and to pay the town 1 per cent. of the gross receipts after five years. Alexander Armstrong, Edward W. Mealey and John W. Stonebraker, of Hagerstown, were named as those to whom the franchise would be granted. A franchise had been granted to the Hagerstown & Potomac Electric Railroad Co., but this was repealed over a month ago, as that company failed to deposit the \$2,500 bond, as required.

Los Angeles, Cal.—The work of reorganizing the Los Angeles street railroads is being rapidly done. A 250 H. P. Ball engine has been installed and the Rison Iron Works engine, formerly in the cable station will be used to run generators. The plant will have a rated capacity of 1,740 k. w., which will be increased by an 800 k. w. Walker generator direct connected to an Allis engine. The feeder systems have been remodeled and there will be 24 divisions worked from a general electric switchboard. Forty-one cars have been received and are ready for use. The entire work of putting in the new machinery and reorganizing roads has been done by Hasson & Hunt.

The Main Street and Agricultural Park Railroad has been sold to the Los Angeles Electric Railway Co.

Philadelphia.—The Fox Chase extension of the Fifth and Sixth streets line has been finished and was opened to the public this week. The road extends from the terminus of the Franklinville branch of the Fifth and Sixth streets line to Fox Chase, a distance of nearly six miles. The Franklinville branch is also about six miles long, and but one fare of five cents will be charged for the 12 miles. The road parallels the Newtown branch of the Reading road.

Meadville, Pa.—The City Councils have accepted the Meadville Street Railway Co.'s offer to have six miles of electric road in operation within a year, pay the city \$4,000 cash, one per cent. of the gross earnings after five years and three per cent. after ten years.

Milton, Mass.—A company has been formed to build a street railroad from Mattapan to Roslindale. Stock has already been taken.

Montgomery, Ala.—The West End & Riverside Electric Railroad Co. has been purchased by a new corporation, which proposes to extend the line beyond the suburbs. The new organization is to be known as the Montgomery Suburban Street Railway. Alexander Troy, is President, and George B. Shelhorn, Secretary and Manager.

New Bedford, Mass.—Proposals are called for building the railroad to Braley's, a distance of four and one-half miles.

Oakland, Cal.—Rails are being laid on the extension of the Oakland, San Leandro and Haywards electric road on Twenty third avenue, northward from Twenty-second street to the Hammond tract, a distance of half a mile. The extension at present will be only single track.

Plainfield, N. J.—The Plainfield Electric Street Railway Co. has secured a franchise to build a road in Plainfield, N. J., and will begin work in the spring.

Rochester, N. Y.—The Irondequoit & Lake Shore Electric Railroad Co. is considering building an electric road from the Rochester & Irondequoit Railroad at Windsor Beach to Sea Breeze and Forest Lawn along the shore of Lake Ontario, a distance of six miles. E. O. McNair, Warsaw, N. Y., is President, and Le Grand Brown, Chief Engineer, Rochester, N. Y.

St. Louis, Mo.—Mayor Walbridge has issued a permit to the Southern Electric Railroad Co. to extend its tracks from its present southern terminus to Jefferson Barracks. It is stated in the permit that the city may at any time remove the tracks from the street without any notice whatsoever to the company. And in that case the company shall have no claim whatsoever for damages because of such removal.

San Francisco, Cal.—The Electric Railway Hill-Cable Co. has been incorporated with a capital of \$1,000,000 to build a cable or electric railroad. Some of the directors are N. W. Griswold, and Fred C. Hart of San Francisco.

Santa Ana, Cal.—Frank Ey has asked the Board of Trustees for a franchise to build a street railroad from Santa Ana to Orange, also on Fifth and Sixth streets to the railroad stations.

San Jose, Cal.—L. M. Hale has asked for a 49-year franchise for an electric railroad from San Jose to Congress Springs.

Seattle, Wash.—The Seattle & Rainier Beach Railway Co. has petitioned to extend its line to Renton, a distance of four miles.

Springfield, Mass.—The Street Railroad Company has placed a contract for two generators, of 1,000 horse-power each, and two 1,200 horse-power engines to run them. The generators are to be furnished by the General Electric Co. and the engines are the Hamilton-Corliss.

Youngstown, O.—Col. L. F. Foster, a director in the Park & Falls Electric Railway Co., which proposes to build an electric road to North Lima to reach the coal fields, said it has been decided to extend the line to Columbiana and thence to Salem and Alliance, where connection will be made with an electric line into Cleveland. The money has all been raised, and the work of construction will be commenced with the opening of spring. Early in the spring the line will be opened for business to North Lima.

GENERAL RAILROAD NEWS.

Augusta Southern.—At a meeting of the directors last week, President J. U. Jackson reported that all of the issue of the first preference lien bonds had been redeemed and cancelled. There are now outstanding \$400,000 first mortgage bonds, due in 1924. The President reported that the property was in good condition and that traffic was increasing.

Chicago, St. Paul, Minneapolis & Omaha.—The company reports earnings as follows for the year ending Dec. 31:

	1895.	1894.	Changes.
Gross earn.....	\$7,56,764	\$7,29,619	I. \$21,145
Oper. exp.....	4,836,652	4,96,184	D. 109,532
Net earn.....	\$2,672,112	\$2,351,435	I. \$320,677
Int. and rentals.....	1,535,878	1,521,437	I. 14,441
Balance.....	\$1,136,234	\$829,998	I. \$306,236
Div. pfd. stock	787,976	787,976	
Surplus.....	\$348,258	\$42,022	I. \$306,236

There was no change in the amount of capital stock in the year. The funded debt outstanding is \$24,167,800, the same as a year ago. In the year the company acquired and now holds in its treasury \$1,500,000 Superior Short Line Railway Company's first mortgage bonds. The net increase in construction account in the year was \$1,499,865, including the cost of the Superior Short Line Railway and property and \$233,584 expended on side tracks, yards, buildings, docks, etc. The passenger earnings in 1895 were \$1,721,130, increase 2.18 per cent.; number of passengers carried, 1,554,387; increase 2.58 per cent.; number of passengers carried one mile, 64,425,274, increase 3.28 per cent.; freight earnings were \$5,354,204, increase 2.66 per cent.; number of tons carried, 3,141,062, increase 8.19 per cent.; number of tons carried one mile, 465,645,802, increase 1.54 per cent.; average rate per ton per mile, 1.10 cents, increase 1.14 per cent. The number of acres sold in 1895 was 14,302, leaving 44,072 acres unsold. The net income from all grants for the year was \$236,704.

Duluth & Iron Range.—The directors having decided not to issue any more first mortgage five per cent. bonds, have authorized a second mortgage of \$5,000,000, of which \$3,500,000 will be used to take up an equal amount of 6 per cent. income certificates held by the Minnesota Iron Co., which controls the railroad company. The remainder of the issue will be held in the treasury of the railroad company for the future needs of its property.

Elmira, Cortland & Northern.—The Lehigh Valley has purchased from J. Rogers Maxwell, Henry W. Maxwell and Austin Corbin the stock of this company, and becomes the owner of the road. The Lehigh Valley paid a nominal price for the stock and guarantees the principal and interest of the bonds, of which the total issue is \$2,000,000. The road will be operated as the Elmira branch of the Auburn Division of the Lehigh Valley and possession has been taken. The road extends from Elmira, where it connects with the Lehigh Valley, north to Canastota, 119 miles, and leases the Canastota Northern from the latter place to Camden, 29 miles further north.

The duties of the following traffic officers of the Lehigh Valley have been extended to cover this line: John H. Heckman, General Freight Agent, South Bethlehem, Pa.; Asa L. Foster, Through Freight Agent, Philadelphia; Bert Hayden, Division Freight Agent, Sayre, Pa.;

George S. Taylor, Coal Freight Agent, Philadelphia; Chas. S. Lee, General Passenger Agent, Philadelphia; and A. W. Nonnemacher, Assistant General Passenger Agent, South Bethlehem, Pa. Mr. C. W. Williams, heretofore General Freight and Passenger Agent of the Elmira, Cortland & Northern, has resigned.

Evansville & Richmond.—The Farmers' Loan & Trust Company of New York has filed suit against the railroad company to foreclose a mortgage amounting to over \$1,000,000.

Interoceanic of Mexico.—The plan for the reorganization of the company provides that the existing six per cent. debentures are to be divided into four per cent. debenture and seven per cent. A and B debenture stock, the interest on the latter stock to be non-cumulative until the revenues of the company have been sufficient to pay full interest on them for five years in succession. It is believed that this plan will bring the charges within the company's earning capacity in gold. It is proposed to set aside about \$500,000 of the new debenture four per cents. for new rolling stock and improvements in maintenance of way.

Lake Erie & Western.—The company has issued a report of the earnings for the year ending Dec. 31, 1895, in advance of the pamphlet report as follows:

	1895.	1894.
Gross earn	\$3,519,104	\$3,345,404
Oper. exp	1,916,115	1,865,852
Net earn	\$1,602,989	\$1,479,552
P. C. of exp. to gross earn	(4.45)	(5.77)
Interest	\$467,500	\$155,333
Taxes	192,440	183,797
Rental of tracks	41,816	41,852
Div. 5 p. c. on pf. stock	592,000	592,000
Total charges and div	\$1,293,786	\$1,274,982
Balance surplus	305.04	204,570

Little Rock & Memphis.—The foreclosure sale of the road, which was to have taken place at Little Rock on Feb. 25, has been postponed for the fifth time. May 12 is now the date fixed by the court.

Monongahela River.—A mortgage for \$1,500,000 to the American Banking & Trust Co., of Baltimore, Md., has been filed for record in West Virginia counties. It is to secure an issue of \$1,500,000 bonds, payable in gold, in 1945. The funds are to be used for the construction of a railroad from Fairmont, W. Va., to Clarksburg, W. Va., and to constructing branch roads not more than 50 miles in length, and, if desired, to construct a branch to develop the coal territory of the upper Monongahela River region in Harrison, Marion and Wetzel counties, W. Va. As a basis for these operations, the company has acquired the property of the Monongahela Coal and Coke Co., comprising 14,000 acres of coal lands, with the machinery and other property of the company.

New York, Pennsylvania & Ohio.—This railroad was sold in Akron, O., on Feb. 28, for \$10,000,000. The purchasers were the representatives of the English bondholders. The sale was a matter of form only, and is the final act in the reorganization of the Erie Railroad.

Norfolk & Ocean View.—This railroad has gone into the hands of a Receiver and Mr. O. Emmerson Smith has been appointed to the office, giving a bond of \$10,000. The appointment of a Receiver is temporary and the company is given until March 31 to show cause why the receivership shall not be made permanent.

Northern Pacific.—Judge Lacombe, in the United States Circuit Court at New York City, decided last week the receivership cases which had been before him for many months, and appointed Frank J. Bigelow and Edward W. McHenry, the nominees of Judge Jenkins, Receivers of the Northern Pacific property within the jurisdiction of his court. At the same time he accepted the resignations of Messrs. Oakes, Payne and Rouse, which were offered soon after they resigned as Receivers in Judge Jenkins' district. Judge Lacombe, hoping for an amicable settlement of the differences between the judges in the western jurisdictions, had repeatedly adjourned the hearing on the application of the attorneys for the acceptance of the resignations of these three Receivers and the appointment of new Receivers. In his order confirming Messrs. Bigelow and McHenry as Receivers for the New York Circuit, Judge Lacombe consolidates the two suits of the Central Trust Company and the Farmers' Loan & Trust Co. for foreclosure of the property. The new Receivers are to file bonds for \$100,000 with his court. Under the order Messrs. Bigelow and McHenry are now receivers for all the property of the Northern Pacific except that of the far western lines. Mr. Andrew F. Burleigh still remains Receiver of the lines in Washington, but the question of the Receivership comes up again before Judges Hanford and Gilbert at Seattle, on March 2.

Philadelphia & Erie.—The annual report for the year ending Dec. 31, 1895, published last week, shows the following results of the operations for the past year: Total earnings, \$4,378,574, an increase of \$413,377; operating expenses, \$3,140,558, an increase of \$198,245, and net earnings, \$1,237,716, an increase of \$215,132. After the deduction of interest on the bonded debt, and equipment and taxes, etc., there remained a balance of \$4,526, which was credited to profit and loss, the total balance to credit of profit and loss on Dec. 31, 1895, being \$624,985. The total number of passengers carried in 1895 was 1,188,181, an increase of 2,088 over the previous year. Total tonnage increased 1,930,411 tons, and tons moved one mile increased 130,252,300. Average net earnings per ton per mile increased 0.004 of a cent, and average net earnings per passenger per mile increased 0.005 of a cent. The report states that: "Under the terms of an agreement dated Nov. 8, 1865, the company, by indorsement on \$1,500,000 of Warren & Franklin first mortgage 7 per cent. bonds, agreed that it would purchase the semiannual interest warrants from said bonds from time to time as they matured, and also purchase the principal of said bonds at maturity, on Feb. 1, 1896. In 1887 \$700,000 of said bonds were paid off and cancelled. We are advised that the balance of said bonds, amounting to \$800,000, maturing Feb. 1, 1896, will be paid by that company on presentation and cancelled, thereby entirely relieving your company of the obligation of contract under which said bonds were indorsed."

Southern.—This company reports gross earnings for January of \$1,630,956, an increase of \$128,880 as compared with the same month of last year, and net earnings of \$449,355, an increase of \$12,457. For the seven months ending Jan. 31 the gross earnings were \$11,956,452, an increase of \$813,770 as compared with the corresponding period of last year, and net \$2,953,885, an increase of \$304,922. The Alabama Great Southern reports gross earnings for January of \$121,845, a decrease of \$10,685 as compared with the same month of last year, and net earnings of \$35,394, a decrease of \$7,502. For the seven months ending Jan. 31 the gross earnings were \$1,053,675, an increase of \$79,689 as compared with the corresponding period of last year, and net earnings of \$410,322, an increase of \$31,871.

West Jersey & Sea Shore.—This is the title adopted for the new company to be formed by the consolidation of the lines operated by the Pennsylvania in New Jersey. The committee which has had the plan for consolidation in charge, has secured the assent of all but one of the companies to the proposed consolidation. The new company will pay the following prices for the stock of the various companies: Camden & Atlantic common, \$20; Camden & Atlantic preferred, \$45; Chelsea Branch Railroad, \$20; West Jersey & Atlantic, \$20; West Jersey, \$60; Alloway & Quinton Railroad, \$20. The price of the Philadelphia, Marlton & Medford, which has refused to consent to the merger, was fixed at \$15. The committee of all these lines except the Philadelphia, Marlton & Medford agreed to the above figures, and they will in turn present the matter to their respective boards. After action by the boards has taken a meeting of the stockholders of the different companies will be held and the plan for the consolidation of these lines will be presented to them.

Electric Railroad News.

Brooklyn.—It is stated that the Nassau Electric Railroad Co. has made arrangements with the Brooklyn Traction Co. to lease the Atlantic Avenue Railroad and the Brooklyn, Bath & West End road. The Atlantic Avenue road has 42.7 miles of track through the city of Brooklyn. The West End road extends from Thirty-sixth street and Fifth avenue, Brooklyn, through New Utrecht to Bath Beach and Beasonhurst to Coney Island and has 13.3 miles of track. This was formerly a steam road, but electricity was substituted in the latter part of 1893.

The lease is to be for 999 years, and the rental is to be \$150,000 a year for the first two years and \$180,000 a year thereafter. The Nassau Co. also agrees to spend \$500,000 in improvements on the Atlantic avenue line and to pay all the fixed charges. A new company will be formed from the Brooklyn Traction Co., with a capital stock of \$4,500,000. This stock will be given in exchange for the old stock, holders of the \$3,000,000 in shares of the Brooklyn Traction Company's preferred stock receiving the same amount in the new securities. Holders of the present common stock will receive one share for every four they now own, provided they subscribe at par to the Brooklyn, Bath & West End Railroad bonds to the amount of 7½ per cent. of their holdings. The penalty for failure to assort is forfeiture of 40 per cent. of their holdings.

On Thursday night of last week bridge car No. 76, the one which has been fitted with electric motors, was used to run a train of two other cars over the bridge and made good time.

Indianapolis, Ind.—George E. Earle, Jr., Wm. F. Harrity and R. W. Clay, all of Philadelphia, announce that they have secured a controlling interest in the street car lines here.

Martinsburg, W. Va.—Workmen are tearing up the rails of the Martinsburg Electric railroad, built about five years ago, during the boom excitement and which runs through the principal streets of the town to Elkins Park, five miles out. The road never has paid, and cars were taken off about a year ago. The rails are to be sold. The power house, engines, etc., were disposed of several months ago.

Peekskill, N. Y.—The Peekskill, State Camp & Mohegan Lake Railway Co. has forfeited its franchise by not having built a certain part of its line by Feb. 20. The company had deposited \$10,000 with the village officers as security that the road would be built.

St. Louis, Mo.—Cars were run last week for the first time on the St. Louis & Kirkwood Electric Railway, extending from Forest Park and Meramec Highlands and connecting with the Lindell Railroad.

TRAFFIC.

Traffic Notes.

The North Carolina Railroad Commission has issued two circulars. The first is as follows: "The maximum charge per 100 lbs. to be made by express companies over one mile and not over 25 miles on shipments and classified merchandise and Classes B, C and D shall not exceed 30 cents." This is a reduction of 10 cents. The second circular reads: "On all shipments of freight originating and terminating in this state, which shall pass over the whole or portions of two or more roads not under the same control, the maximum rates charged shall not be greater than the sums of the local rates on such freight, less 10 per cent. for the distance hauled over each road."

Resolutions approving the Joint Traffic Association have been passed by the New York Board of Trade and Transportation and by the Commercial Exchange of Philadelphia. It is said that the last named body will send a committee to Washington to present a memorial to the Interstate Commerce Commission.

The Government has lately transferred about 100 sailors from Norfolk to San Francisco and a similar number from San Francisco to Norfolk. Both companies went by way of New Orleans over the Southern Pacific; the westbound company went over the Seaboard Air Line and the eastbound over the Southern Railway.

The Board of Managers of the Joint Traffic Association have announced a reduction in grain rates from Buffalo to the following figures (cents per bushel):

	Corn and	Wheat.	Rye.	Barley.	Oats.
	Cents.	Cents.	Cents.	Cents.	Cents.
To New York	5	3½	4½	4	4
To Philadelphia	4	3½	3½	3½	3½
To Baltimore	4	3½	3½	3½	3½

The Buffalo elevators are full of wheat and corn that arrived by lake before the close of navigation and the reduction was made at the request of the Buffalo grain merchants. The reduction is about three eighths of a cent per bushel. The new rates apply only to grain "ex lake," and not to through rail shipments from the West. The rates to Boston are the same as the rates to New York on export freight. The Philadelphia merchants assert that they are still at a disadvantage. On its face, they say, this would appear to give a chance to do business in Philadelphia; but when it is remembered that the railroad companies pay terminal charges in New York and make a charge for like service at Philadelphia "the apparent advantage in the reduced freight rate is seen to be only delusive, not real."

Commission Decision on Pacific Coast Wheat Rates.

The Interstate Commerce Commission, in an opinion by Commissioner Yeomans, has announced its decision in favor of the complainants in the cases of Milton Evans and H. D. May against the Oregon Railway & Navigation Company and its Receivers and others. The

cases involved the reasonableness of wheat rates from Walla Walla and Dayton, Wash., to Portland, Or. The main rulings of the Commission in these cases are as follows: Prior leave of a court which has appointed the receiver of a railroad company is not necessary to entitle a shipper to complain against such receiver in a proceeding before the Commission, nor is such leave necessary to give the Commission jurisdiction in such a proceeding. A showing of substantial similarity in transportation conditions is necessary to make the rates of carriers in other sections of the country proper standards of comparison in a case of alleged unreasonable charges. The wheat rates to Portland of 23½ cents per 100 lbs. from Walla Walla, and 23½ cents from Dayton, when the complaints were filed, were unjust and unreasonable; a reduced wheat rate of 21½ cents, put in force from both shipping points since the cases were instituted, is still above a reasonable and just charge for the service rendered; the rate on wheat in carloads from Walla Walla to Portland should not exceed 19½ cents, or \$3.90 per ton, and the rate for the somewhat longer distance from Dayton to Portland should not exceed 20 cents. Complainant's claim for money reparation was denied.

Chicago Traffic Matters.

CHICAGO, Feb. 26, 1896.

Officers of the Eastern and Western roads at Chicago have been in a tangle for a week over the Grand Trunk's 25-cent grain rate between St. Paul and Boston via this city, which has been in effect since Feb. 1. Traffic Manager Reeve, of the Grand Trunk, authorized Chairman Midgley, of the Western Freight Association, to issue this tariff on the strength of the old understanding among the eastbound roads that the Grand Trunk would be allowed to meet Canadian Pacific competition whenever and wherever necessary. General Manager Hays became convinced that this agreement was wiped out by the Joint Traffic Agreement, and instructed General Freight Agent Brown at Chicago to request Chairman Midgley to cancel the tariff. This Mr. Midgley refused to do on the ground that as Traffic Manager Reeve and General Manager Hays were the officers who authorized the issuance of the tariff they were the only persons who could order its cancellation. General Manager Hays then notified Chairman Midgley to withdraw the tariff, which will be done on March 15. The Chicago-St. Paul lines were almost determined to keep the tariff in, saying that it had saved the day against the Canadian Pacific, and officers of these roads are much wrought up over the Grand Trunk's action in repudiating the old standing agreement. The Board of Control and the Joint Traffic Association are also getting a share of the Western wrath.

The Chicago and Iowa lines, together with Chicago grain merchants, are much disturbed over the diversion of grain, especially corn, from Iowa points to St. Louis. Under the fictitious claim of Mississippi River competition, the St. Louis, Keokuk & Northwestern has for a long time been making a very low grain rate from Keokuk to St. Louis, which, combined with the local rate from any point in Iowa, makes a much lower through rate to St. Louis than is made from the same territory to Chicago. By this combination there is an average difference of three cents per 100 lbs. in favor of St. Louis. Officers of the roads are now consulting as to whether the St. Louis rate shall be advanced or the Chicago rate lowered.

The Chicago & Alton has made arrangements with the Peoria, Decatur & Evansville to run freight and passenger trains from Peoria to St. Louis and Kansas City. Peoria will be made a terminal of the Alton, and there will be at least two daily trains to St. Louis and one to Kansas City. This will give Peoria the only through line to the West and South it has ever had, although in size it is the second city in the state. The trains will be run over the P. D. & E., to Lincoln, 45 miles. The Alton already runs passenger trains between Peoria and Chicago.

The Chicago & Eastern Illinois has made a five per cent. reduction in freight rates between Chicago and local points in Illinois to meet a similar reduction made by the Illinois Central some time ago. At a recent meeting of the Illinois lines it was agreed to make no further reduction in rates between Chicago and Mississippi River points.

The Interstate Commerce Commission, represented by Commissioners Morrison, Clements and Yeomans, held a three days' session in Chicago last week. The only case of importance was that against the Chicago-Coloardo roads for ignoring the long and short haul clause of the Interstate law in last summer's coal rate war. The hearing will be continued at Washington.

The trans-Missouri roads have agreed that hereafter they will use only continuous passage tickets between the Missouri and Colorado common points.

The roads running between Chicago and Colorado are much wrought up because the Union Pacific, Denver & Gulf and the Southern Pacific have taken a large Colorado mining brokers' excursion to New York from Denver via New Orleans. Officers of the Western lines say that the Southern Pacific has now contracted to move a party of fifty families of Russian farmers from Philadelphia to a point on the Union Pacific east of Denver at a very low rate.

The Chicago Freight Bureau, representing a small minority of the wholesale merchants of Chicago, is making an effort to stir up the merchants of this city on behalf of the uniform classification bill now before Congress. There does not seem to be much local interest in the matter.

Eastbound shipments last week (five days) amounted to 57,692 tons, compared with 71,070 tons for the previous week, a decrease of 13,378 tons, and against 58,316 tons for the corresponding week of last year. The traffic was divided among the several lines as follows:

Roads.	WEEK TO FEB. 22.		WEEK TO FEB. 15.	
	Tons.	p. c.	Tons.	p. c.
Michigan Central	5,367	9.2	6,501	9.2
Wabash	4,096	7.0	5,368	7.6
Lake Shore & Mich. South.	8,513	14.7	10,529	14.8
Pitts., Ft. Wayne & Chic.-go	7,023	12.0	8,016	11.3
Pitts., Cin., Chi. & St. Louis.	7,292	12.5	7,064	10.0
Baltimore & Ohio	5,116	8.8	5,032	7.1
Chicago & Grand Trunk	7,192	12.4	7,855	11.0
New York, Chic. & St. Louis	4,495	7.7	6,198	8.7
Chicago & Erie	6,955	12.0	12,445	17.5
C., C. & St. Louis	1,633	3.7	2,022	2.8
Totals	57,692	100.0	71,070	100.0

Of the above shipments, 3,391 tons were flour, 32,937 grain and mill stuffs, 5,734 tons provisions, 7,105 tons dressed beef, 1,207 tons butter, 1,391 tons hides, and 3,477 tons lumber.



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Recent Car Coupler Decisions.

UNITED STATES CIRCUIT COURT.

NORTHERN DISTRICT OF NEW YORK.

GOULD COUPLER COMPANY,
vs.
PASCAL P. PRATT, ET AL.

Final hearing
in equity.

[Decided Nov. 19, 1895.]

EDMUND WETMORE,
FREDERICK P. FISH
and ERNEST C. WEBB,
For the Complainant.

FREDERICK H. BETTS
and L. F. BETTS,
For the Defendants.

COXE, J.

This is an equity suit for infringement of two letters patent owned by the complainant. No. 254,106 was granted to Clinton Browning, assignor, etc., February 28, 1882, and No. 337,650 was granted to Charles O. Barnes and Lucien Barnes, Sr., March 9, 1886. Both are for improvements in car-couplings of the Janney type.

Defect of the Janney Coupler—The Remedy by the Browning Patent.

The Janney coupler, patented February 26, 1879, No. 212,703, was defective in that the hook is left free to rotate by the jarring of the cars to a point where coupling is rendered impossible. When in this position it is necessary for the operator to go between the cars and, by hand, adjust the coupler. This operation is slow and dangerous. Browning's object was to remedy this defect by rotating the hook automatically to the desired coupling position, and retaining it there until required to rotate in the act of coupling. In other words, Browning opens and holds open the coupler automatically. This result is accomplished by means of a spring, gravity or other equivalent means. The operator, standing at the side of the car, releases the locking device by a lever and at the same time extends the coupling hook where it is held in a position ready for use.

There is but one claim. It clearly covers both the idea of opening the hook automatically and also the idea of holding it open in a proper position for coupling.

The claim is as follows:

"In a car coupling, composed of a bifurcated head and rotary interlocking hook, the combination, with said rotary hook, of means, substantially such as described, for automatically opening and retaining said hook in proper position for coupling."

The defenses are anticipation, lack of patentability and non-infringement.

Novelty and Invention in the Browning Patent.

The Court has little difficulty in finding novelty and invention in this patent.

Browning attempted to remedy the defects in the Janney coupler. He dealt with no other coupler. His task was not broadly to construct a coupler which would open and close automatically, but to give these features to the Janney coupler—to make it a complete and perfect device by adding to it the additional element of automatic opening. The prior art, therefore, in so far as it relates to totally different types of couplers, is not material, for the reason that it furnishes little information which could be utilized by one whose sole object was the improvement of the Janney coupler. An inventor, for instance, might have succeeded in making the old link and pin couplers automatic, but this would not have taught others how to make the Janney structure automatic.

The Janney Coupler Not Perfect.

Janney was an inventor of more than ordinary genius. He struck out on entirely new lines, and produced a coupler so far superior to all that had gone before that it at once began its phenomenal progress towards popular favor. The Master Car Builders' Association adopted it as the standard, and now it is almost universally recognized as the most complete coupler used on American railroads. It was not perfect. Everyone, including the inventor himself, recognized this fact; but it was so much better than the old varieties that, even with its defects, it soon supplanted them. The tide of invention soon set in the direction of the Janney coupler. Obviously the man who could remedy its defects was to take a long forward step in the art. Browning was the first to take this step. Everyone engaged in practical railroading knew that in certain situations the Janney coupler was slow and dangerous. Hundreds of skilled car builders and railroad mechanics knew of these defects; the brilliant inventor himself knew of them, but no one suggested a remedy until Browning proposed his simple plan of throwing out the hook by mechanical means.

The Significance of Browning's Invention.

He is attacked on the old lines. The accusation against him is one that every inventor must meet. The moment the solution of the problem is made plain those who did not see it seek to belittle the achievement of the one man who did see it, by the assertion that it was so exceedingly plain and simple as to exclude the possibility of a demand upon the inventive faculties. This will not do. An invention does not cease to be meritorious because it is simple. Many of the greatest inventions are most simple. The test should be not whether the mechanism is simple or complex, but whether the patentee has given the world something new; whether the public is richer for his contribution to the art; whether he has produced novel and beneficial results. Invention should be determined more by an ascertainment of what the inventor has actually accomplished than by a technical analysis of the means by which the result is attained. Measured by this rule there can be little doubt that Browning is entitled to the rank of an inventor.

Makes the Position of Trainmen Safe.

He made the position of intelligent trainman one of absolute safety. It is no longer necessary for the operator to go between the cars for any purpose. The crushing out of life and the maiming of limbs between the dead blocks of approaching cars are things of the past. Not only is there a saving of human life but of time and labor also. The advantages of Browning's invention have been very generally recognized, and over three thousand couplers embodying the invention are in use on many of the leading railroads of the country. It is safe to say that to-day no car would be accepted if equipped with couplers requiring the trainmen to go between the cars to manipulate them.

The Hein Patent No Improvement.

The nearest approach to Browning in the prior art is unquestionably the Hein patent, No. 190,858. Hein was also attempting to improve the Janney coupler. He shows a block attached to a spring which, after the hook is partly opened, is capable of opening it still farther and retaining it in a coupling position, although nothing is said of this function in the patent. There is no evidence that the hook was ever so used in actual practice.

This is not the Browning structure. It misses the very point of the Browning invention. It shows how near an intelligent experimenter may come to success and yet fail utterly. If the court understands the Hein patent, it is, as to the points now under consideration, no improvement on the old Janney coupler. It does not do away with hand manipulation or the necessity for the operator to expose himself to danger by going between the cars. Indeed, it would seem more cumbersome in operation than the Janney coupler.

Operator Must Go Between Cars.

The operator must first, by means of a lever, withdraw from its recess the block which holds the hook in a locked position; second, he must go between the cars and open the hook part way at least; and third, release the lever from its retaining notch so that the spring will force the block against the heel of the hook, thus forcing the hook wide open and holding it there. So long as the operator must go between the cars it is easier for him to open the hook the entire distance by one motion of the hand than to open it part way and depend upon a subsequent manipulation at another point to open it still wider. Hein shows a new form of lock, but the trainman's task was just as dangerous afterward as it was before.

The Talbot Patent Belongs to a Different Class of Couplers.

The British patent to Talbot shows an ingenious and complicated mechanism designed for use on English and continental railroads and not adapted, it would seem, for use on American roads. It has a bell crank somewhat resembling the hook of the Browning patent which is rotated automatically by a coiled spring. In other respects the device, though somewhat *sui generis*, resembles the old link and pin type more than the Janney type of coupler. Of course coiled springs have from time immemorial been used to pull or push mechanism into working position, but would the Talbot coupler suggest the Janney coupler to the skilled workman?

If the defendants are right the Talbot device would infringe and, if made before, would anticipate the Janney invention.

Theoretically there are several points of similarity, while in practice it is clear that it belongs to a different class and operates in a totally different manner. It is thought that it would neither anticipate, nor infringe, nor suggest to the skilled workman improvements upon the Janney coupler. Can it be said that the bell cranks of Talbot interlock with swinging links or shackles

would convey to the mechanic the idea of opening automatically Janney's rotary hook? It is thought not.

Browning's Idea Not Shown in or Suggested by the Prior Art.

It is not possible to discuss all of the patents in evidence. They have been examined and an earnest effort has been made to understand them. None of them adds materially to the disclosures of Hein and Talbot. Indeed, this branch of the case may be left with the following quotation from the complainant's expert, in whose conclusion I fully agree:

"In the foregoing review of all the patents discussed it conclusively appears, I think, that the Browning invention does not exist in any of them, and is not suggested by any one of them alone or by any number of them taken together. In fact, it appears that, as stated in the early part of this answer, no inventor ever conceived of the idea of accomplishing what Browning set out to accomplish, and that he stands, therefore, in the art both as the first to conceive such an idea as well as the first to put it into form and practice."

The question, as before stated, is: Did it require invention to conceive the idea and embody it in practical form of unlocking and throwing out the Janney hook by mechanical means? Unless the prior patents show this, or show mechanism which would suggest this to the skilled workman, they do not anticipate or invalidate the Browning invention. The record shows that an army of inventors were struggling in this art, and yet the feature now conceded to be so valuable did not occur to any of them till Browning gave it form.

Talbot and Hein, who, it is asserted, did all that Browning did, were respectively seven and five years before him in the art, but the standard coupler of America continued to kill and maim and no one was found to stop the dangerous work.

After surveying the vast array of couplers, in infinite variety of form, with which the record abounds, it is hardly possible to resist the conclusion that an indirect tribute has been offered to Browning's ability and genius. Hundreds of inventors were in the field, some came very near to success, but no one quite reached the goal, no one did what Browning did.

Browning Made the Janney Coupler Safe.

He made the Janney coupler safe. This is enough. *He is entitled to rank not with the great inventors, but certainly on a higher plane than some who have been awarded the palm. These views are sustained, it is thought, by a long line of authorities, of which the following are among the most recent:*

Potts v. Creager, 155 U. S., 597, 15 Sup. Ct., 194; DuBois v. Kirk, 158 U. S., 58, 15 Sup. Ct., 729; Topliff v. Topliff, 145 U. S., 150; Kremens v. Cottle, 148 U. S., 556; Smith v. Macbeth, 67 Fed. Rep., 137; Brake-Shoe Co. v. Detroit Co., 47 Fed. Rep., 894; National Cash Reg. Co. v. American Cash Reg. Co., 53 Fed. Rep., 207.

Infringement of the Browning Claim.

The question of infringement is more difficult. As before stated the claim covers both the feature of opening the hook and holding it open in a position for coupling. Of this there is no doubt. All of the experts agree upon this proposition. The complainant's expert says, and says correctly, that a coupler which has means for accomplishing but one of these results does not infringe. In order to infringe, then, a coupler must have "means for automatically retaining the rotary hook in proper position for coupling." The means thus adopted must be something more than the mere inertia or friction of the parts caused by rust or otherwise. It must be something more than is shown by the old coupler. It must be the Janney coupler plus some additional means. The retaining means need not necessarily be the same as the opening means. It cannot be doubted that one who, for instance, throws the hook open with a spring and holds it open with a latch, will infringe. Any other construction would be cruelly technical.

Of course the defendants have the bifurcated head and rotary interlocking hook of the claim. Their's is a twin coupler of the Janney type. That they employ means for opening the hook automatically is also undoubtedly, but it is said that their mechanism operates upon a different principle and is not the equivalent of the spring or gravity devices described in the patent. The defendants' hooks are thrown out by an ingenious double acting lever contrivance, patented to Charles A. Pooley, November 3, 1891, which is clearly an equivalent for the means described in the Browning patent.

The Browning Patent Not Limited to Specific Construction.

There was nothing in the prior art limiting Browning to a specific form of construction. Every mechanic knew that the result could be accomplished in a variety of ways, and Browning says this in so many words at the close of the description. He is entitled to a wide range of equivalents, but even though the range were limited it would still include the defendants' construction. *Levers and springs are often used interchangeably in the arts and furnish a familiar example of equivalents. Browning used a spring; the defendants use a lever. The object in each case is to open the hook. What possible difference can it make in principle whether it is pulled out by a spring or kicked out by a lever? Whether it is pulled out by a coiled spring, pushed out by a flat spring, forced out by a lever or made to slide down the spiral inclines of a hinge of the old window blind construction, would seem quite immaterial. In each instance the same object is accomplished without change of result by means which have for years been used interchangeably by mechanics.*

Assume that instead of a lever the defendants used a coiled or flat spring arranged back of the locking arm to force out the hook the moment the locking pawl was moved out of engagement; could there then be a doubt that the patented device was appropriated? This is precisely what is done, except that a lever is substituted for a spring. In theory the two things are identical.

The Defendants' Coupler Does Hold the Knuckle Open, although Imperfectly.

That the defendants employ means for automatically retaining the hook is beyond dispute, but they insist that it is not retained in a suitable position for coupling, and is therefore not within the claim. In their coupler the outside of the locking catch and the inside of the locking arm are given an unusual fullness or bulge, so that, when these abnormally bulging surfaces come together, the inward swinging of the hook is arrested and held at that point against all the ordinary shocks of railroading. To move still further inward the hook must have sufficient force imparted to it to move not only the heavy locking catch, but force it up the inclined bearing in the drawhead. That the hook is, for all practical purposes, stopped at the point of contact with the catch is clearly shown both by proof and by actual experiment in court; but the question remains, is this a proper coupling point? It is not necessary that the hook should be retained in its most open position, for, admittedly, it need not be open to its fullest extent to be in the proper position for coupling, even with an opposing coupler which is locked. The distinction between a fully open position and a proper position for coupling was recognized by the inventor, as will be seen by a perusal of the file wrapper.

On the other hand, the hook must be retained in such a position as will in usual practice facilitate the operation of coupling cars. If it has passed the useful coupling point, the fact that in some improbable contingencies it may couple with an opposing hook will not bring it within the language of the claim. A position in which it will only couple theoretically is not a proper position.

A position in which it will usually operate without further attention from the trainmen is a proper position. In other words it need not be in the best possible position for coupling, if in a position where it will couple in the ordinary conditions of everyday use, or in some of them it is enough.

If the defendants' couplers are unlocked, the most unfavorable condition in which the hooks can get is when they bear against the locking catch. There is testimony that opposing hooks will couple in this position. If this be true they can, when unlocked, never get out of the coupling position. Here is a distinct practical advantage. The attendant, seeing the hooks unlocked, can proceed with the coupling process with perfect confidence in its successful termination. It is true that this testimony is disputed and the experiments made in court indicated that the fact may be otherwise.

If the complainant is right, the hook in its retained position will couple with any but a locked coupler and if the defendants are right it is still true that it will couple with an opposing hook which is opened, even for a very short distance, beyond actual contact with the locking catch.

Conceding that the couplers will not operate when both hooks are held against the locking dogs, it is not improbable that there may often be substantial advantage in keeping so near the coupling point that the slightest variation in the position of either hook must make successful coupling certain. The partly open position is not so desirable as the position which Browning had in mind, but it is a distinct advantage over a hook with no retaining device at all. There are many contingencies in which it may be a proper position for coupling. The defendants have Browning's idea, but their embodiment of it seems less effective than his.

The Browning Will Couple in Every Condition.

In the position shown by him the hook will couple with an opposing coupler in every conceivable condition. The defendants' hook will not do this, but will couple in very many instances where the old Janney hook would fail. The defendants have a retaining device, but it will not do all that Browning's device, when in a perfectly operative condition, will do. The peculiar bulge of the hook and dog before mentioned are not features of the Pooley patent. They are shown in patent granted to Truman L. Gilbert, Jan. 19, 1892. These features are not merely accidental. They were added deliberately. If not intended for retaining devices it is not easy to perceive for what purpose they were added; that the coupler was strong enough without them seems clear from the successful operation of prior couplers.

The Browning Patent Meritorious and Should be Protected.

The court has reached the conclusion that the defendants infringe, with less hesitancy because it is thought that Browning, by making the Janney coupler fully automatic, and therefore safe, has done a meritorious act, entitling him to protection. The retaining means, though clearly an element of the claim, is not of the essence of the invention. If omitted, the claim would have been valid. It probably would have been omitted if Browning had had the assistance of an experienced solicitor. In these circumstances it is not only the duty, but it should be the pleasure of the court to give him the fruits of the invention if possible.

Where the true value of the invention lies in one element of combination and an infringer has appropriated, that he should not be permitted to escape upon the plea that he has omitted a subordinate and comparatively non-essential feature unless it is clear that he has omitted it. To find an invention meritorious and then defeat it by an illiberal construction is as inconsistent as it is unfair. To decide that an inventor has conferred a benefit upon mankind and subsequently destroy his pat-

ent by a harsh construction is condemned both by the general principles of equity and by express authority. The court should be diligent to give him the rewards of his genius and labor and resolve doubtful points in favor of the patent.

The Essential Feature is Automatic Opening.

Another and more practical view of the situation is perhaps, entitled to some weight. Because of the presence of the retaining element in the claim it is impossible for the Court to give the patentee the full benefits, of his invention. The really valuable feature is the device for automatic opening. This may be appropriated so long as the retaining element is not present. It has not escaped the attention of the Court that the defendants may use their kicking lever in connection with the old Janney hook as shown in "Complainant's Exhibit Janney Coupler," with impunity. If their experts are correct in the statement that their retaining mechanism does not retain and is of no practical value for this purpose it is very easy to discontinue it. Why use it if it is not useful? If it is useful, if it does operate to retain the hook in a proper position for coupling, the claim is infringed. If it does not, the defendants' coupler will lose no material element of value by its removal. Its presence seems inconsistent with the contention that their coupler is intended to operate and does operate without the least reliance upon such mechanism. The presumption is manifestly the other way.

It may as well be admitted that the defendants' argument on this branch of the case is a cogent one. There are many expressions in the Browning patent which are in accord with their contention. Nevertheless the claim is capable of a construction which includes the defendants' structure and every consideration seems to require that this construction should be adopted.

The Barnes patent is for additional improvements in the same variety of coupler. So far as this controversy is concerned it covers the Browning mechanism plus inclined bearings for controlling and guiding the upward and downward movements of the locking catch. The third claim, the only one involved, is as follows:

"3. The combination of the drawhead provided with the cavity *c* and opening *b*, the swinging head *H*, composed of the coupling arm *d* and supplemental arm *d*, and pivoted on the drawhead to swing outward therefrom, and having the arm *d* entering the opening *b*, the catch *C* pivoted in the cavity *c*, inclined bearings *i o*, respectively on the bottom and top of the cavity, and the chain *l* connected to the catch and passing out from the top of the cavity *c*, substantially as described and shown for the purpose set forth."

The defenses are lack of patentability and non-infringement.

The Barnes coupler has the same general features as the Browning coupler. It discloses no new principle of operation and accomplishes no new result. Its improvements relate to minor details in the locking mechanism, and seem to be confined entirely to the addition of two inclined bearings, one at the top and the other at the bottom of the drawhead cavity. The locking and unlocking process is facilitated by permitting the locking dog to slide down and up these inclines. The discussion may still further be narrowed to a consideration of the upper incline *o*, for whatever of novelty there is in the claim must be found in the addition of this element. Every other feature was not only old in analogous structures, but old in car couplers of the Janney type. Without pausing to consider whether it involved invention to add the upper inclines to the combination, it is perfectly clear that the claim must be limited to the specific details shown and described.

I fully agree with the defendants' expert. He says:

"Taking the entire state of art prior to Barnes & Barnes' invention, I am clear that the third claim of their patent, if it contains any novel combination, must be restricted to the precise construction shown and described in the patent."

That the claim is a limited one is admitted by the com-

plainant, and, in view of the prior art and the well-known principle of operation utilized by the patentees, a broad construction is clearly inadmissible.

The prior art taught the patentees how to do all that they have done, and if their exact combination is not found there it is approximated so closely that it is manifest that the doctrine of equivalents cannot be invoked to bring within the patent mechanism which employs different means and operates in a different way.

The rib in the defendants' coupler, which it is said corresponds to the rib *o*, was placed there originally as a strengthening rib. It was not designed to perform any function in connection with the locking dog and it is doubtful if it ever did do so. The great weight of testimony is to the effect that this rib never did any practical work in crowding the dog back when pulled up by the chain. This seems to be demonstrated conclusively by the fact that very soon after the commencement of this suit the strengthening rib was removed. The coupler operates as well without the rib as with it. With the strengthening rib gone, of course, there could be no pretense of infringement, unless something else was found to take the place of the rib *o*. An element of the combination was lacking. That there is nothing in the drawhead cavity of the Pooley coupler as now constructed to take the place of the rib *o* is absolutely certain, and therefore the complainant seeks relief in the theory of equivalents.

It is said that the elongated eye link which seems to be common to both the Gould and Pooley coupler, when pulled up by the chain acts as a lever with a sliding fulcrum where it impinges upon the front margin of the chain aperture, and when so acting it tends to pry the locking dog backward. This long link in the moving chain is said to be the equivalent of the fixed bearing of the patent. The position cannot be maintained. In location and manner of operation it is a very different contrivance. A construction which would hold such a structure as an equivalent would have to be an exceedingly broad one, so broad, indeed, as to invalidate the patent.

With the claim restricted as required by the prior art and its own language it is not possible, in my judgment, to hold the defendants' coupler as an infringement. It does not have the upper inclined bearing *o* of the claim.

An Injunction and Accounting Ordered.

It follows that the complainant is entitled to a decree for an injunction and an accounting based upon the claim of the Browning patent, but, as the defendants have succeeded upon the Barnes patent, the decree should be without costs.

Motion for Rehearing.

UNITED STATES CIRCUIT COURT.

NORTHERN DISTRICT OF NEW YORK.

GOULD COUPLER COMPANY

vs.

PASCAL P. PRATT *et al.*

In Equity,
No. 6,184.

MR. EDMUND WETMORE, MR. FREDERICK H. BETTS,
MR. FREDERICK P. FISH, and
and
MR. ERNEST C. WEBB, MR. JAMES F. GLUCK.
For the Defendants.
For the Complainant.

COXE, J. (orally):

I think I had better state my views at this time, as you are all here, and, judging from past experience, it may be difficult to find you all here again. The counsel for the defendants, who opened the argument, stated correctly, I think, the rule in cases of this kind, though, perhaps, not quite so strongly as it might be stated.

The Rule for Rehearings.

I understand the rule to be that when the Court has heard and decided a case after due deliberation, the mere fact that the Court has made mistakes is not a sufficient reason for a rehearing. For error of that character the remedy is very clear—it is by appeal. A rehearing may be had where it appears that the Court has overlooked a material fact, or a controlling authority, statute or rule of law. It may also be had upon the ground of newly discovered evidence; not new evidence, not cumulative evidence, but newly discovered evidence; and where a rehearing is asked for upon that ground the petition must be accompanied by some excuse showing why the evidence was not produced at the original hearing. Where none of those grounds exists a rehearing should not be granted. I think counsel sometimes overlook the fact that this rule is very explicit, and has been enunciated over and over again. In a case where everyone has had full opportunity to be heard, where counsel have argued the questions involved without limit, where the Court has studied the record and the briefs for weeks, and has given to the decision the best judgment in his power, his determination ought not to be lightly set aside upon merely cumulative evidence, or upon the suggestion that points which the Court deems important might be explained away if another opportunity to do so were given.

The Case Fully Presented and Carefully Studied.

In the present case I do not now recall all that took place prior to the hearing, but I do recollect that the case was frequently before the Court upon applications for additional time; these were granted and the fullest opportunity was given to both parties to present everything which was regarded as important. Both parties had the fullest opportunity to take their proofs. Upon the hearing both parties presented their views without limit as to time. Elaborate briefs were filed. For ten days, almost consecutively, I studied the record and briefs and the decision reached is the best that I am capable of making in the case. I gave the arguments pro and con the consideration I thought them entitled to, and came to the conclusion that the Browning patent was valid and infringed.

I regret exceedingly that, from a remark that was made by the defendants' counsel, either Mr. Pooley or Mr. Gluck should have entertained the idea for a moment that I intended to reflect upon the conduct of either of them in the slightest degree. I have known both Mr. Pooley and Mr. Gluck too long to impute improper conduct to either of them, and if there be anything in the opinion, or if anything has at any time been said by me to suggest such an idea, I wish to withdraw it. The conduct of the defendants was perfectly logical and natural, from their point of view. They thought, and have argued here, that the Browning patent was not a broad patent, that it was limited to the precise construction shown in the drawings, and to the two methods referred to in the specification, one of which relates to a spring and the other to an incline. Entertaining that view, their conduct was logical and proper. The questions which were presented at the argument were fair questions for the consideration of a court of equity. The defendants had a right to have them decided.

The Pooley Patent Has a Retaining Device.

After careful study I came to the conclusion that the peculiar bulge given to the dog and to the back of the hook operated as a retaining device. The reasons for that conclusion are stated fully in the opinion. I do not know that it is necessary to repeat them.

Browning Patent Entitled to Liberal Construction.

I thought at the argument, as I think now, that the question of infringement is a difficult one, but entertain-

ing the opinion that Browning was the first to make the Janney hook safe, by giving it an automatic opening, I thought the patent was entitled to a liberal construction.

No New Evidence.

The affidavits presented here do not, under the rule, present a case for the reopening of this cause. There is no newly discovered evidence. It is simply cumulative. It relates to proof that is already in the case, and to propositions which were argued over and over again at the final hearing.

The assertion that the Gould coupler will not work when rusted upon the incline was made again and again. The Judge came down from the bench and examined the Gould coupler in evidence. Attention was called to the fact that the coupler in court had been recently greased, and the suggestion was made that this was done to meet the exigencies of the trial. All this is recalled. Now the additional evidence simply bears upon that question, which is already in the case. It adds something to what is now in the record.

As to the old Janney coupler, I think, perhaps, counsel have misapprehended the suggestion made in the opinion. As I now recall it, my first impression was that I would say, in order to illustrate my meaning, that I thought the defendants would have the right to make couplers in accordance with the drawings of the Pooley patent. I may be wrong, but that is my impression. Subsequently I came to the conclusion that little had been said about the Pooley patent, that it had not been thoroughly considered, and that I had better take some structure in evidence to illustrate the idea I meant to convey. That was that the defendants, under the construction that I felt compelled to give to the Browning patent, in which both of these features were made elements of the claim, might use their kicking device in connection with a hook that under no circumstances could be retained in a proper position for coupling. I used the old Janney coupler as an illustration, supposing that when it was brought in contact with the pin it was in a position where no one could say that it was in a proper position for coupling. The model in court certainly appeared to illustrate this point. So that I do not think the new suggestions made with reference to that exhibit are of very great importance. The point is this: The defendants cannot use a retaining device in connection with their "kicker." They can use the "kicker" freely without a retaining device.

What Browning Meant by "Automatic."

As to the meaning of the term "automatic" that was fully discussed at the final hearing; and, as I said then and continue to say, it does not seem to me that the *Court is called upon to give a definition of the term "automatic," because it is perfectly plain what Browning meant by it. He meant some device which would throw out the hook, as distinguished from the old method of going in between the cars and pulling it out by hand—some method such as he described, connected with the coupling-hook itself, and illustrated by him in his patent by the incline and the spring, or equivalent mechanism. He says that a number of devices would be equivalents for the incline and spring.*

So, whether right or wrong, I feel confident that I have done the best I am capable of doing in this case, and that nothing would be gained if the case were reopened and rehear.

The Limit Fixed by the Decree.

It may be proper now to make a suggestion with reference to the request made by Mr. Gluck. I think the old Janney exhibit is an important factor in the view that we are to take in the future with respect to this question. I am inclined to think that it is no more than just to the defendants that the standard should be fixed in this decree, so that they may know in the future

precisely what they may do without being called to account as infringers of the Browning patent. It is sometimes said that the Court should not determine such questions in advance, and that they should be presented on a motion to punish the defendants for contempt or upon a new bill; but here we have all the parties and all the facts before us, and I do not see why it is not proper that their rights should be determined, in order that they may know whether the Court will hereafter consider them as infringers or not. It seems to me that if the defendant's hook is retained at a point substantially as represented by the red line on the blue print exhibit filed with the petition, that they will not infringe.

Mr. WETMORE: We are perfectly willing to adopt that standard, and have no objection to such a statement being incorporated in the decree.

THE COURT: I suppose you wish to have your proposed decree settled here?

Mr. WETMORE: Yes, sir. Here is a decree which we present. It is in the usual form.

Mr. BETTS: We also have a form of decree

Mr. WETMORE: While, of course, I can see that the red lines of the drawing to which your Honor referred would bring their coupler outside of the patent, yet I might find in working that it did have a retaining device. Therefore I do not want to cut myself off from raising that point by stating that I have no objection. Of course your Honor may state what is right about it but I do not want to bind myself to a consent that those red lines would not be an infringement. I suppose your Honor can put it in any form you like.

THE COURT: I can only put it in the form that it is not intended by this decree to enjoin the defendants from using couplers made in conformity with the exhibit attached to the decree.

Mr. GLUCK: This is the only suggestion I have to make, your Honor. The yellow line indicates the Janney, and the red line our new form. Now let the decree be read: It is not intended to enjoin couplers made in the form shown in the annexed drawing, mentioning exhibit so and so. Of course there will be a little variation, but let it provide that in no event shall they exceed the yellow line, as indicating the Janney type.

Mr. WETMORE: Oh, no, we could not consent to that.

THE COURT: The point is, of course, that if you keep your coupler in such a condition that when the hooks are both resting upon the retaining walls they cannot couple under any circumstances, then you clearly do not infringe. That is the practical situation.

Mr. FISH: That is a good way to put it, your Honor. Why not state it so in the decree?

THE COURT: I thought you wanted to make it a little more specific.

Mr. GLUCK: We do, your Honor.

Mr. BETTS: I have submitted a decree which is just like theirs, with the exception of this:

"Ordered, adjudged and decreed that the car-couplers manufactured and sold by the defendants in accordance with the drawings and specifications of U. S. Letters Patent No. 462,413, granted to Charles A. Pooley, dated November 3, 1891, which do not contain the peculiar bulge on the coupling-hook and locking-catch shown in the drawings of Letters Patent to Truman H. Gilbert, No. 467,249, dated January 19, 1892, do not infringe the said patent granted to Browning."

Mr. WETMORE: The instant that is done you open a new field.

Mr. BETTS: Your proposed decree fails to contain a foundation statement in regard to those Pooley patents before we adopted the Gilbert patent.

Mr. WETMORE: We have made no charge of infringement against you on that.

Mr. FISH: There is no charge of infringement, and no proof of it. Your own witness testified that there were none put upon the market.

Mr. GLUCK: The practical effect of this decision is to give us a black eye, and we would like to have this decree made as we have indicated.

Mr. WETMORE: The decree simply states that these

defendants have infringed. We proved a certain specific coupling, and I have not designated it in the decree for the very purpose of avoiding any question that would do them an injustice. The opinion shows what it was, and to say that they infringe it by making and selling couplers like the Gilbert patent:

THE COURT: Do not those made under the Pooley patent come under this decision?

Mr. GLUCK: Yes, sir.

Mr. BETTS: We did not understand the position of the complainant. They never counted on this question between Gilbert and Pooley until they came into court.

Mr. WETMORE: Oh, yes, we did. If they did not understand it, then they did not comprehend the English language. Why, in our opposing affidavits we have quoted that the infringement consisted in the bulge.

Mr. BETTS: They sprung that upon us at the hearing.

Mr. WETMORE: I would suggest that if your Honor puts in the statement you have indicated it will cover the point.

Mr. BETTS: I submit that each side submit a form of decree to your Honor before you sign this decree. I think we ought to have an adjudication that couplers made in accordance with the drawings of the Pooley patent, and which do not contain the peculiar bulge shown in the drawings of the Gilbert patent, do not infringe the letters patent granted to Browning.

Mr. WETMORE: There is not a particle of evidence as to what that was.

THE COURT: I think, gentlemen, that you cannot make it any clearer than this: That couplers made in substantial conformity with the red lines shall not be held to infringe the Browning patent.

Mr. GLUCK: That car couplers made in conformity with the Pooley patent, as shown in the drawings attached hereto, and then attach a copy of the drawings to the decree, shall not be considered an infringement, etc.

The Court Makes the Decree Specific.

It is not intended by this decree to enjoin the defendants from making, using or selling, nor shall they be held to account for, couplers made in substantial conformity to the blue print attached hereto; that is to say, a coupler with the nose thereof retained in substantial conformity with the red line on blue print.

That may be added to the end of this decree, and I will sign it.

UNITED STATES CIRCUIT COURT,

NORTHERN DISTRICT OF NEW YORK.

GOULD COUPLER COMPANY

vs.

PASCAL P. PRATT, *et al.*

Memorandum.

[Coxe, J.]

I have erased the words "and supplemental petition, dated December 31st, 1895," from the order proposed by Mr. Webb, and, as so amended, have signed the order.

I do not see how this question can be very material, as the opinion states fully the reasons for refusing a re-hearing. However, as the defendants say that the facts of the supplemental petition, which I have not examined, were not passed on by this court, it is better to strike out the clause referred to.

The addition to the order suggested by Mr. Betts is not necessary. The same thing appears in the decree, which is a proper place for it. It seems to me that it would be out of place in an order denying the motion.

In compliance with a request from both parties I have corrected the stenographer's report of my remarks at the close of the argument and have filed it with the Clerk.

Leave to Reopen Denied.

At a term of the Circuit Court of the United States, held in and for the Second Circuit, and Northern District of New York, at the United States Court House, in the City of Utica, on the 7th day of January, 1896.

Present: Hon. ALFRED C. COXE, District Judge.

GOULD COUPLER COMPANY,
Complainant,
vs.

PASCAL P. PRATT, JOSIAH LETCHWORTH,
OGDEN P. LETCHWORTH, AND THE FIRM
OF PRATT & LETCHWORTH,
Defendants.

In Equity,
No. 6,184.

This case having come on to be heard upon the motion of the defendants above named for leave to reopen the proofs in the above entitled cause, and for leave to introduce further evidence in said cause, and the defendants' original petition dated December 4, 1895, on said motion and the affidavits of Truman H. Gilbert, Ogden P. Letchworth, Josiah Letchworth, Pascal P. Pratt, George W. Goodyear, W. Alen Vail, Jesse H. Poole, Charles A. Pooley, James F. Gluck, Arthur S. Browner and Thomas F. Crane having been read in support thereof; and the affidavits of Melville E. Dayton, James H. Dunn, Eugene V. Meyers, William McConway and M. J. McMahon having been read in opposition thereto, and counsel for the respective parties having been heard and due consideration had, it is, upon motion of Ernest C. Webb, Esq., solicitor for complainant.

Ordered, that the said motion of the defendants for leave to reopen the proofs in the above entitled cause and for leave to introduce further evidence in said cause be and the same hereby is denied.

ALFRED C. COXE, U. S. J.

The Case Against the Trojan Company.

UNITED STATES CIRCUIT COURT,

NORTHERN DISTRICT OF NEW YORK.

Before Hon. ALFRED C. COXE Judge.

GOULD COUPLER COMPANY,
Complainant,
vs.

THE TROJAN CAR COUPLER COMPANY,
Defendant.

In Equity,
No. 6,384.

UTICA, N. Y., Jan. 14, 1896.

Motion for Preliminary Injunction.

Appearances:

ERNEST C. WEBB,
EDMUND WETMORE,
FREDERICK P. FISH,
For Complainant.
EDWIN H. BROWN,
FREDERIC H. BETTS,
For Defendant.

(Stenographic report of the oral opinion of the Court.)

THE COURT (orally): I think I may as well state my views at this time. As I said when this case, or, rather, the Pratt & Letchworth case, was here a few weeks ago, upon a petition for a rehearing, that the questions in that litigation were examined by the Court with care, and the decision arrived at was arrived at after great deliberation, and as it has been said here by the counsel for the complainant, that decision, whether right or not, must now be considered as the law applicable to this controversy; and the question now is what new element is brought into the case, brought into the controversy, rather, by the patents which have been for the first time brought to the attention of the Court to-day.

If it be true, as the defendant contends, that the *Browning* patent simply covers a device—or rather that the object of *Browning* was to make it safe for a trainman to couple cars without going between the cars and manipulating the couplers by hand—if that be the proper

construction of the patent, of course, these patents which have been brought to the attention of the Court to-day have a very material bearing upon the controversy. If, however, the construction placed upon the patent by the Court be the correct one, I do not think that they add materially to the case as presented by the defendants in the Pratt and Letchworth litigation. The Court construed the patent to be an improvement upon the *Janney* type of coupler, confining it exclusively to that type, and was of the opinion that it covered a valuable invention because it made the *Janney* coupler safe. So limited and so construed, the improvements or the evolution of the art of making link and pin couplers safe, do not, in my judgment, affect the question which we are now considering; and, as I understand it, all of the patents which are now brought to the attention of the Court either relate to improvements in the link and pin device or improvements in what is perhaps properly described by the term *Miller* couplers. I do not think that any of the new patents are as valuable references as either the *Talbot* or the *Hein* patent, especially the *Hein* patent, which I thought came nearer to the *Browning* device than any other in the record.

The Trojan Opening Device Infringes.

*Now, upon the question of infringement: Again, if the Court is correct in the construction that the *Browning* claim covers any mechanism inherent in the coupler head whereby the hook is pushed out or pulled out by a spring and lever, by inclines, or any other equivalent devices, it seems to me pretty clear that the finger attached to the lever rod in the *Trojan* coupler must be regarded as an infringement.*

The Trojan Contains a Retaining Device.

As to the other branch of the claim, of course the infringement is much clearer than in the Letchworth case, because I do not understand that there is any dispute that the *Trojan* coupler contains the retaining device.

An Appeal of the Pratt Case Doubtful—Injunction Restricted to New Business.

I had hoped that there would be, or was, an appeal in the other case, and in that event it occurred to me that a *modus vivendi* might be agreed upon pending that appeal. But as it seems to be very doubtful whether an appeal is to be taken I do not think that I could consistently with my view of the rights of the complainant, after this severe litigation, refuse to grant the motion upon certain terms and conditions. Considerations have, however, been presented here, which I think should induce the Court as far as possible, consistently with the rights of all the parties, to limit this injunction so as to do as little injury as possible to the business of the defendant. Without discussing the suggestions which have been made here, it is said, first, that the plaintiff is guilty of laches; second, that the business of the defendant is its sole business—and I assume that it

employs a large number of persons, operatives and workmen, who would be thrown out of employment if the business was stopped immediately. It is also said that the defendant company is perfectly responsible, and also that it has a number of existing contracts to supply railroads with this coupler, which it has made with entire good faith, believing that it had a right to make them. Now it seems to me, in view of all these suggestions, that if there are existing contracts, the Court should permit the defendant, in view of its responsibility, to fill the contracts; because, as has been said here, it would subject the defendant to actions for damages for refusal to conform to the contracts if that right was not given, and I do not know but also they should be permitted, if they have some of these couplers on hand, to dispose of them. In other words, it seems to me that the rights of both parties would be subserved and equity will be done, if the injunction, broadly speaking, applies to future business of the defendant.

MR. BETTS: Suppose we take an appeal in the Pratt and Letchworth case, as your Honor suggests—what is your Honor's suggestion?

THE COURT: I supposed from what you said at the hearing of that case, that an appeal had been taken. If so, I suppose, being a preferred case, that the argument would take place very soon. Of course I see that there are questions here that you would not have in that case.

MR. BETTS: Yes. But the Court of Appeals, if we take this case up alone, might say "the Pratt and Letchworth case is to be treated as law until reversed, and as that case has not been taken up we will not disturb the injunction in this case."

THE COURT: I should have said that neither course would be quite safe perhaps in view of the rule that obtained in presenting this case for the first time upon an appeal from an order for a preliminary injunction.

MR. BETTS: It forces this defendant to take up the Pratt and Letchworth case.

MR. WETMORE: I do not see, if the Court please, that we ought to be delayed in the very reasonable order which your honor proposes, because of some uncertainty which may exist as to whether Pratt and Letchworth are willing to appeal that case. They ought to have made up their minds before.

THE COURT: I should imagine that the record in that case could be used in this case.

MR. WETMORE: We have put the record in, sir, so that it is just as good. I might suggest, if your Honor please, in regard to the conditions which you have mentioned, that the existing contracts be stated and filed, or a memorandum.

THE COURT: Why not sit down and agree upon your order?

MR. WETMORE: Yes, sir; and secondly, that an account may be kept of the couplers which may be sold after this order and that are exempted from the injunction.

MR. BETTS: We would ask that the injunction be suspended entirely pending the appeal.

THE COURT: From this order?

MR. BETTS: From this order, yes. We shall take an appeal, of course.

MR. WETMORE: I do not think that the gentleman shows any reason for that.

THE COURT: The probability is that upon an appeal from this order you will get a decision before—that is, that the conditions I will put in the order will give you substantially the relief you would want.

MR. BETTS: We will give a bond. Of course it is going to hamper the business very much. It is our sole business. We have got 200 workmen, as our affidavit states, dependent upon this business, and of course it is a very material hindrance to the business.

THE COURT: It is always the situation which confronts the Court when a patent has been sustained and the defendant has been held to infringe.

MR. BROWN: If I may say, your Honor, in a case last winter his Honor Judge Lacombe, in the case of Bonack Machine Co. vs. National Cigarette Co., stayed an injunction upon condition that the case should be taken up at a very early day, and the Court received it and put it upon the calendar for hearing, and it was heard in a very few weeks after.

MR. WETMORE: I have made similar motions and had them refused.

MR. BROWN: Judge Lacombe suggested that, Sir; I did not even ask for it.

MR. WETMORE: I made a similar application to Judge Townsend at New Haven the other day, but my client is under an injunction. I failed to prevail. I think that these reasonable terms, if the Court please—

THE COURT: I do not believe that I would be quite justified; but any reasonable suggestion that you may wish to make with reference to the defendant's business, why I should—

Mr. BETTS: May I ask your Honor if you rule out the affidavits which they offered last?

THE COURT: Yes, sir.

At a Special Term of the Circuit Court of the United States of America, for the Northern District of New York, in the Second Circuit, held at the United States Court House in the City of Utica, on the 14th day of January, A. D. 1896.

Present:-

The Honorable ALFRED C. COXE,
Judge.

GOULD COUPLER COMPANY,
vs.
THE TROJAN CAR COUPLER COMPANY.

The motion for a preliminary injunction herein coming on to be heard, and on reading and filing the affidavits of Charles M. Gould, Frederick P. Huntley, Melville E. Dayton, and a second affidavit of the said Dayton, and on the bill of complaint herein and on the record and exhibits in the case of the Gould Coupler Company vs. Pascal P. Pratt, et al., on behalf of the complainant, and the affidavits of Alfred H. Renshaw, Charles E. Foster, Frank L. Freeman, L. H. F. Betts, R. C. Blackall, Chas. E. Turner and W. J. Robertson, and a second affidavit of said Chas. E. Foster, and the exhibits and patents therein referred to on behalf of the defendant, and after hearing Messrs. Wetmore and Fish, counsel for the complainant, in support of said motion, and Messrs. Betts and Brown, counsel for the defendant, in opposition thereto,

Terms of the Injunction Against the Trojan Company.

Now, on motion of Mr. Ernest C. Webb, complainant's solicitor, it is hereby

Ordered, That said motion be, and the same hereby is granted and that a preliminary injunction issue in accordance with the prayer of the bill of complaint, enjoining the defendant, its officers and directors, servants, agents, attorneys and workmen, and each and every one of them, from making, selling or using car-couplers made in accordance with the letters patent No. 254,106, dated the 28th day of February, 1882, originally issued to Clinton Browning and Lindsay and McCutcheon and embracing and containing the invention therein described and specifically referred to in the claim thereof; save and except that this injunction shall not extend to couplers to be delivered by the said defendant in fulfillment of orders or contracts already taken or existing and to be filed within six months, provided the defendant shall file with the clerk of this court within five days hereof a list of such existing orders or contracts and the number of car couplers included in each and the names of the parties ordering or contracting for the same, and further this injunction shall not extend to car couplers now manufactured and on hand in the defendant's possession over and above those that may be required to fill said existing orders or contracts, provided a written statement of the number of the said couplers now on hand be also filed with the clerk of this court within five days.

Nor shall this injunction extend to the sale of repair parts, other than draw-heads, for couplers of defendant's manufacture now in use, provided a written statement of such repairs and the persons to whom they were furnished be filed with the clerk of this court at the end of every period of 30 days hereafter. It being understood that, in case the defendant takes an appeal from this order and proceeds with due diligence, a further extension as to existing contracts may be given in case

the decision of said appeal is not reached within said before mentioned period of six months.

ALFRED C. COXE, U. S. J.

The Trojan Company Must File a List of Contracts and Statement of Couplers on Hand.

**UNITED STATES CIRCUIT COURT,
NORTHERN DISTRICT OF NEW YORK.**

GOULD COUPLER COMPANY

vs.

THE TROJAN CAR COUPLER COMPANY.

On motion of complainant and on the affidavit of Ernest C. Webb in support thereof, and upon hearing counsel for the respective parties, it is

Ordered, That if the papers heretofore filed by the defendant in alleged compliance with the provisos in the order for preliminary injunction in this cause and purporting to be (a) a list of orders or contracts and the number of car couplers included in each and the names of the parties ordering or contracting for the same, and (b) a written statement of the number of couplers on hand at the date of the injunction, be returned to this Court signed and verified by an officer of the defendant on or before Saturday, February 22, 1896, complainant's motion that the injunction heretofore ordered in this cause be made absolute be denied, but if said papers be not so signed, verified and filed in this Court on or before said date, then that motion be granted to the extent that said injunction be made and become absolute. Said papers when filed in this Court to be exhibited to complainant unless the Court otherwise order.

ALFRED C. COXE, U. S. J.

FEB. 18, 1896.

Text of the Trojan Injunction.

UNITED STATES CIRCUIT COURT,
Northern District of New York.

The President of the United States of America

to

The Trojan Car Coupler Company, its officers, directors servants, agents, attorneys and workmen. Greeting: Whereas, it has been represented to us in our Circuit Court of the United States for the Northern District of New York, in the Second Circuit, on the part of Gould Coupler Company, complainant, that Letters Patent of the United States was granted on the 28th day of February, 1882, to Clinton Browning and Lindsay and McCutcheon for improvements in railroad car couplings, said Letters Patent being known and distinguished as No. 254,106, and that the complainant is now the owner thereof, and that you, the said The Trojan Car Coupler Company, have infringed upon said Letters Patent and upon the exclusive rights of the complainant under the same, by the manufacture and sale of couplers containing the improvement described in said Letters Patent and specifically set forth in the claim thereof.

Now, therefore, we do strictly command and enjoin you, the said The Trojan Car Coupler Company and each of your officers, directors, servants, agents, attorneys and workmen, under the pains and penalties which may fall upon you in case of disobedience, that you forthwith and until the further order of this court, desist and refrain from making, selling or using car couplers made in accordance with the said Letters Patent No. 254,106, and embracing and containing the invention therein described and specifically referred to in the claim thereof; except that this injunction shall not extend to couplers

to be delivered by the defendant in fulfillment of orders or contracts already taken or existing, and to be filled within six months, provided the said defendant shall file with the clerk of this court within five days hereof a list of such existing orders or contracts and the number of car couplers included in each, and the names of the parties ordering or contracting for the same, and further this injunction shall not extend to car couplers now manufactured and on hand in the defendant's possession over and above those that may be required to fill said existing orders or contracts, provided a written statement of the number of the said couplers now on hand be also filed with the clerk of this court within five days.

Nor shall this injunction extend to the sale of repair parts, other than drawheads, for couplers of defendant's manufacture now in use, provided a written statement of such repairs and the persons to whom they were furnished be filed with the Clerk of this Court at the end of every period of 30 days hereafter.

WITNESS, the Honorable Melville W. Fuller, Chief Justice of the United States, at the City of Utica, in said Northern District of New York, this sixteenth day of January, in the year of our Lord one thousand eight hundred and ninety-six and of our Independence the one hundred and twentieth.

W. S. DOOLITTLE,
Clerk.

ERNEST C. WEBB,
Complainant's Solicitor,
No. 181 Broadway, New York City.

THE CASE AGAINST THE SMILLIE COMPANY.

At a stated term of the United States Circuit Court in and for the District of New Jersey, held at the United States Court House, in the City of Trenton, on the 11th day of February, 1896.

Present: Hon. EDWARD T. GREEN, Judge.

GOULD COUPLER COMPANY

vs.

THE SMILLIE COUPLER & MANUFACTURING CO.

Motion having been made on behalf of complainant for the grant of a restraining order of court and a preliminary injunction to issue against the defendant herein, based upon the bill of complaint and the affidavits filed herein on the part of and behalf of said complainant, and after hearing Mr. Edmund Wetmore for the complainant, in support of the motion, and Mr. Charles F. Dane in behalf of defendant, and not opposing, it is hereby

A Preliminary Injunction Granted.

Ordered, that a preliminary injunction be and the same hereby is granted, restraining the defendant, the Smillie Coupler and Manufacturing Company, its officers, attorneys, agents, servants and employees, from the further manufacture, use or sale of car couplers embraced in or specifically covered by the claim of Letters Patent of complainant number 254,106, under the pain and penalties which may fall upon them, and each of them in case of disobedience, until otherwise decreed by this Court, which claim is in the following words, to wit:

"In a car coupler composed of a bifurcated head and rotary interlocking hook, the combination, which said rotary hook, of means, substantially such as described, for automatically opening and retaining said hook in proper position for coupling."

EDWARD T. GREEN.